For producers of Sand and Gravel, Crushed Stone, Cement, Lime, Gypsum, and other nonmetallic minerals

OCTOBER 1955

PIT and QUARRY

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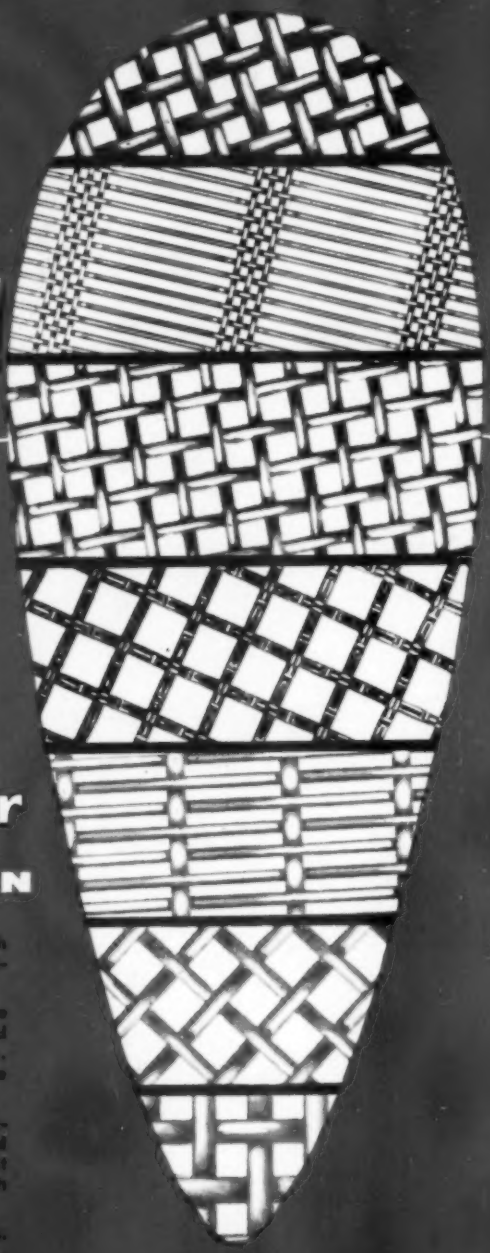

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WOVEN WIRE SCREEN

- Longer life! Woven of super-tough alloys with maximum durability and resistance to abrasion, set and fatigue.
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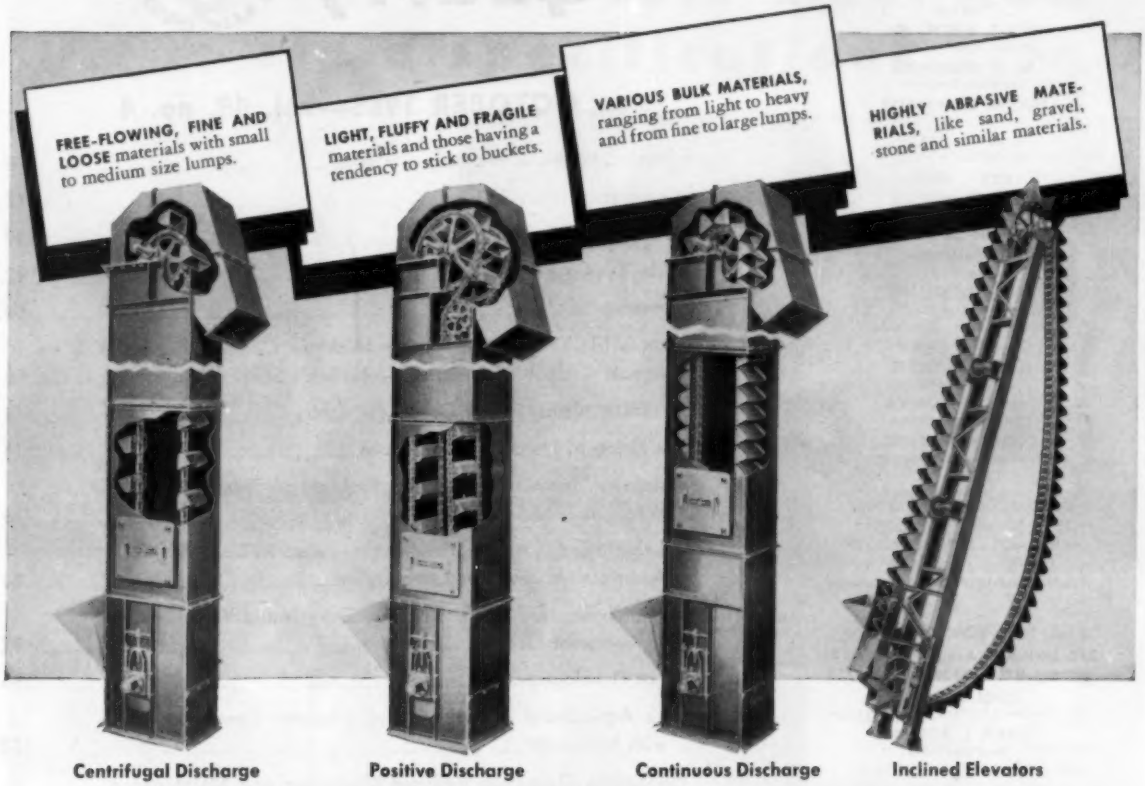
LINK-BELT Bucket Elevators are tailored to suit your needs


FREE-FLOWING, FINE AND LOOSE materials with small to medium size lumps.
LIGHT, FLUFFY AND FRAGILE materials and those having a tendency to stick to buckets.
VARIOUS BULK MATERIALS, ranging from light to heavy and from fine to large lumps.
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pit and quarry

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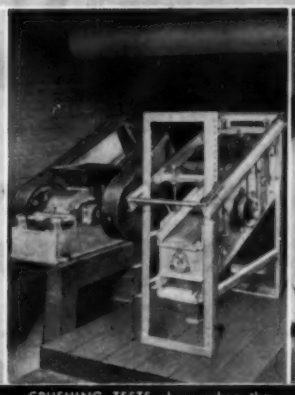
To subscribers: When requesting change of address, kindly send old as well as new address.

How DECO Testing Laboratory can help producers meet new rigid specifications

SCREEN TESTS tell when proper size has been reached for material specifications . . . can reduce crushing and grinding costs.



CRUSHING TESTS show when the minimum amount of work has been done to meet size specifications. Establish data for selecting crushing equipment.

VISUAL EXAMINATION identifies and classifies various material . . . serve as a basis for planning tests.

GRINDING TESTS determine the size and type of unit to do the grinding job.

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There is no cost to you for this preliminary examination. We would appreciate the sample being sent to us prepaid (by parcel post if convenient). We hope you will say, "Let's see what they can do for us!"

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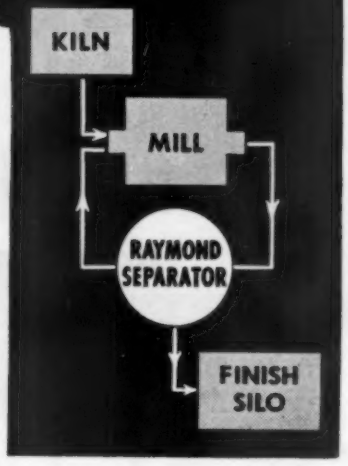

RAYMOND MECHANICAL AIR SEPARATORS available in Single Whizzer Type or Double Whizzer Type (as shown) and in sizes from 2'6" to 18'0" in diameter for various capacity requirements — also 10-Inch Laboratory Separator.

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With the proper setting of the separator, the slide damper controls can be adjusted externally to provide any fineness specifications from standard Portland cement to the high early strength grades.

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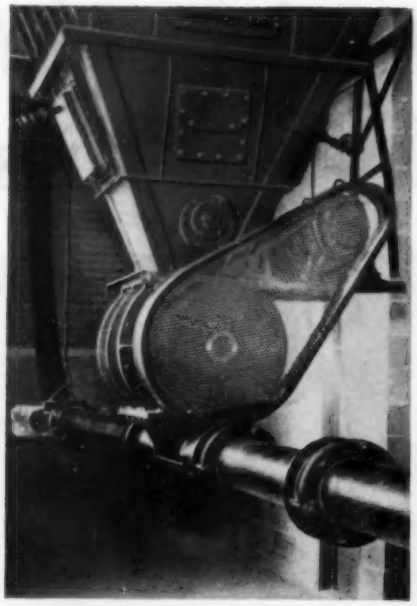


Fuller vane type feeder discharging clay from bin to an Airveyor pneumatic conveying system.

When you need **Feeders**

see

Fuller

. . . pioneers in materials handling

Designing and building feeders for handling dry pulverized and granular materials is nothing new for us . . . we've been making them for over a quarter of a century. We build them in many styles and sizes, for capacities of a few pounds a minute up to many tons an hour.

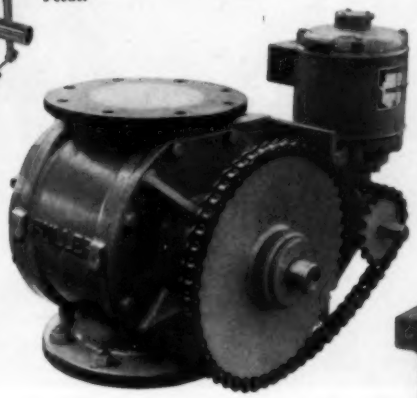
Standard line of feeders are built of cast iron, or combinations of iron and steel. We are also equipped to furnish you with feeders of special alloys to meet almost any desired individual requirement.

The Fuller Roll Feeder is especially adapted to handle dry, pulverized materials with volumetric accuracy, without pulsations. It will successfully handle materials such as pulverized coal, hydrated lime, cement raw materials and finished Portland cement.

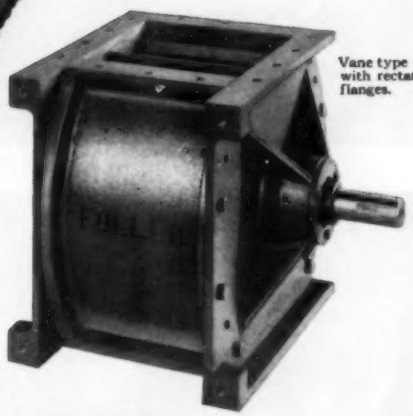
Fuller vane type feeders are used for handling dry, pulverized and granular materials where extreme volumetric accuracy is not particularly essential. They may be used as air locks for positive or negative pressure differentials of up to approximately 7" Hg. (3-1/2 pounds) without appreciable loss. These feeders are built with stuffing boxes and ball bearings, for vacuum, low pressure, and general purpose uses, with circular or rectangular flanges. For complete descriptive information as to sizes, dimensions, and capacities write for Bulletin F-5, Fuller Feeder and Rotary Valves.

Fuller Roll Feeder

You're invited to visit Fuller at Booth 213 at the Chemical Show, Philadelphia, December 5-9



Vane type feeder with circular flanges. Rigid drive for minimum space requirements. Eliminates drive stress between feeder and related equipment.



Vane type feeder with rectangular flanges.

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Celite	Kaolin	Soap Chips
Cement (Portland)	Lime (hydrated)	Soda Ash
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Copra	Meals	Wood Chips
Corn	Middlings	Wood Flour
Corn Flakes	Resin (synthetic)	Zinc Calcine
Dried Blood	Rice	Zinc Sulphate

F-15
1794

FULLER COMPANY, Catasauqua, Pa.

GENERAL AMERICAN TRANSPORTATION CORPORATION SUBSIDIARY

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Tiger Brand Amerclad in this

Extra flexible welding cable is shown. Fine stranded construction eases strain on operators' wrists.

Notice the flexibility. Tiger Brand is easy to handle.

does the three big jobs high production strip mine

Imagine the worst possible environment for electrical cable, and you'll find it at the strip mine shown in these pictures. The operators are plagued with underground fires, so severe that they have ruined the plastic windows in some of the power shovels. The rocks get so hot that you can't touch them or walk on them.

Despite the heat, the Tiger Brand Amerclad cable lies on the ground day in and day out, delivering dependable power 21¾ hours every day.

They do a lot of blasting at this mine, too. Although they try to protect the cable, it is pounded by large, sharp rocks almost every time there is a blast. Yet, when the pictures were taken, all the original cable was still in use, after *12 solid years of service.*

The mine owners point out that when a cable fails it costs money in down-time and replacement. The clincher is this: every foot of shovel cable, welding cable and drilling cable in the mine is Tiger Brand Amerclad.

Roughhouse service. That cable slung in the air and coiled on the sides of the drills is all Tiger Brand Amerclad.

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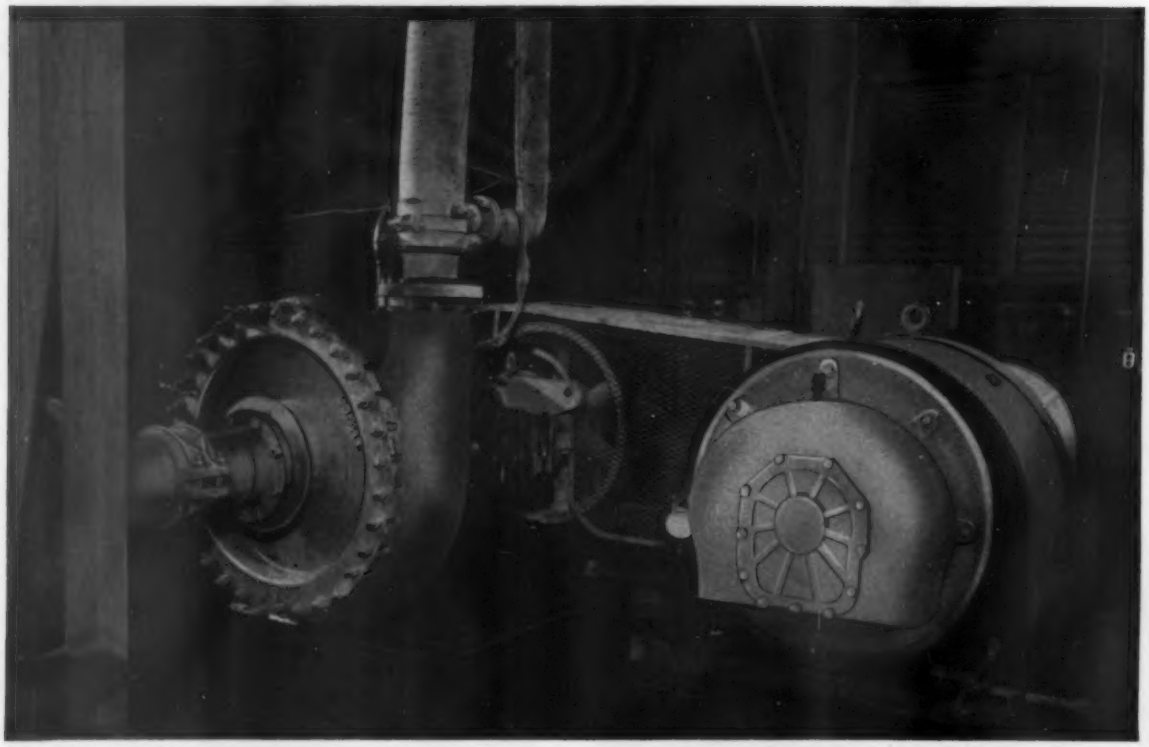
- shovel & dredge cable
- special purpose wire & cable
- aerial, underground and submarine cable

USS Tiger Brand — **ELECTRICAL WIRE & CABLE**

UNITED STATES STEEL

Now... Amsco® Pumps built especially to handle abrasive mixtures



Wearing parts last longer because they're cast in HC-250 a special wear-resistant alloy

If you pump tailings, sand, taconite, cement mill slurry or any grinding, abrasive mixture... ordinary pumps don't stand a chance.

That's why Amsco now produces a type of pump with all wearing parts cast in an exceptionally abrasion-resistant metal. It's a special alloy called HC-250... now used in Amsco Pumps where extremely abrasive applications are encountered. HC-250 has an abrasion resistance unsurpassed except by expensive carbide insert or hardfacing materials.

Whether your application calls for a pump to withstand extreme abrasion or severe impact, or a combination in-between... Amsco produces a line to meet your requirements. And, in addition to the special wear-resistant metals, Amsco pumps are compactly designed to save on labor costs when repairs are needed. Their simple design means fewer parts to wear out... fewer man-hours needed to disassemble and assemble an Amsco pump.

So, for trouble-free pump service, ask an Amsco pump specialist for a recommendation. He'll analyze your requirements and recommend the type of Amsco pump best suited for your application. Standard-size Amsco pumps range from 6″ to 16″ discharge openings. Larger sizes are also available. Write for Bulletin No. 548 IP which gives specifications and complete data on the Amsco pump line.

Amsco also manufactures a complete line of hardfacing welding equipment... both rods and machines.

AMERICAN Brake Shoe COMPANY

AMERICAN MANGANESE STEEL DIVISION
Chicago Heights, Ill.

Mechanical Loading Speeds Construction

Tractor-Excavators in African copper mines are helping to speed road building projects. The picture above shows an Eimco 105 loading trucks at the rate of 300-350 yards per hour (at left note view of old method which is continuation of featured picture on right hand side).

Speeding highways, construction jobs and earth or rock moving jobs of all kinds is done most economically with Eimco equipment.

The Eimco is revolutionary — it prompts a new concept in estimating the cost of jobs requiring material handling equipment.

In the lower picture at right, the Eimco is loading a piece of rock estimated to contain at least 35 cubic feet. Its shape would require that it be broken to be loaded with other types of equipment but the Eimco easily loads it overhead into the 21 yard rock wagon.

Loading large rock wagons of this type is done 90% efficiently from the end or 100% efficiently from the side. Some jobs in narrow cuts or highway widening jobs must use end loading and no other equipment can perform this operation as economically as an Eimco Tractor Excavator.

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The Editor's Page

Highway Program—A Must

FOR many years it has been literally pounded into the public consciousness that our highway system is completely inadequate for present needs, much less for the rapid increase in traffic volume in the years ahead. Anyone who drives any distance in any part of the countr, is well aware of these deficiencies. Automobile clubs, organizations of highway users and contractors, safety experts, government departments, and others have pointed out the urgent necessity for more and better roads. During the last several years it has seemed more and more likely that we might get some of the roads we so badly need. Construction of toll highways has begun in some areas. Federal aid to the states was increased, and prospects for an integrated nationwide network of superhighways were very bright.

But that was before politics got into the picture. First President Eisenhower's one-year program and later compromise measures were side-tracked; then finally, on July 28 of this year the House of Representatives crushed the Fallon Bill, and no compromise or substitute measure was agreed upon before Congress adjourned. This happened in spite of the expressed conviction of most members of Congress that drastic steps must be taken without delay to overcome the critical deficiencies in our highway system. Now it seems unlikely that a special session of Congress will be called to pass a highway bill; in fact, there seems to be some feeling among congressional leaders that such highway legislation is unlikely to be passed in 1956.

THE reasons for this betrayal of the public trust are apparently many and complex. Maneuvering for political advantages between the two parties and between factions within those parties is blamed by many. Blundering, ineptness, and personal prejudices within the two houses were undoubtedly factors. The desire of congressmen to adjourn and get back home also played an important part. Fear of causing further inflation was mentioned. It is well known that the trucking, rubber, and petroleum industries, which would benefit the most from a real highway program, lobbied against any bill which would increase the taxes on autos, trucks, tires, etc., or which would increase existing license fees in order to finance such construction. Farmers' organizations opposed any such legislation because they want rural roads, not superhighways. Invasion of states' rights was also charged. The only group which appeared to be willing to pay for such a program was the automobile driver.

A FEW years ago it was necessary to sell the public and legislators on the need for more and better roads. Statistics were quoted to the effect that traffic accidents killed nearly 40,000 people annually and injured more than 2,000,000, and that these figures were increasing as traffic became heavier and highways more inadequate. Such figures can still be quoted.

Statistics also showed the tremendous loss in time and dollars caused by traffic congestion and "slow" roads. Two-lane highways suitable only for local traffic were being made to serve both long-distance, high-speed traffic and short-run, slow-speed traffic, an obvious impossibility.

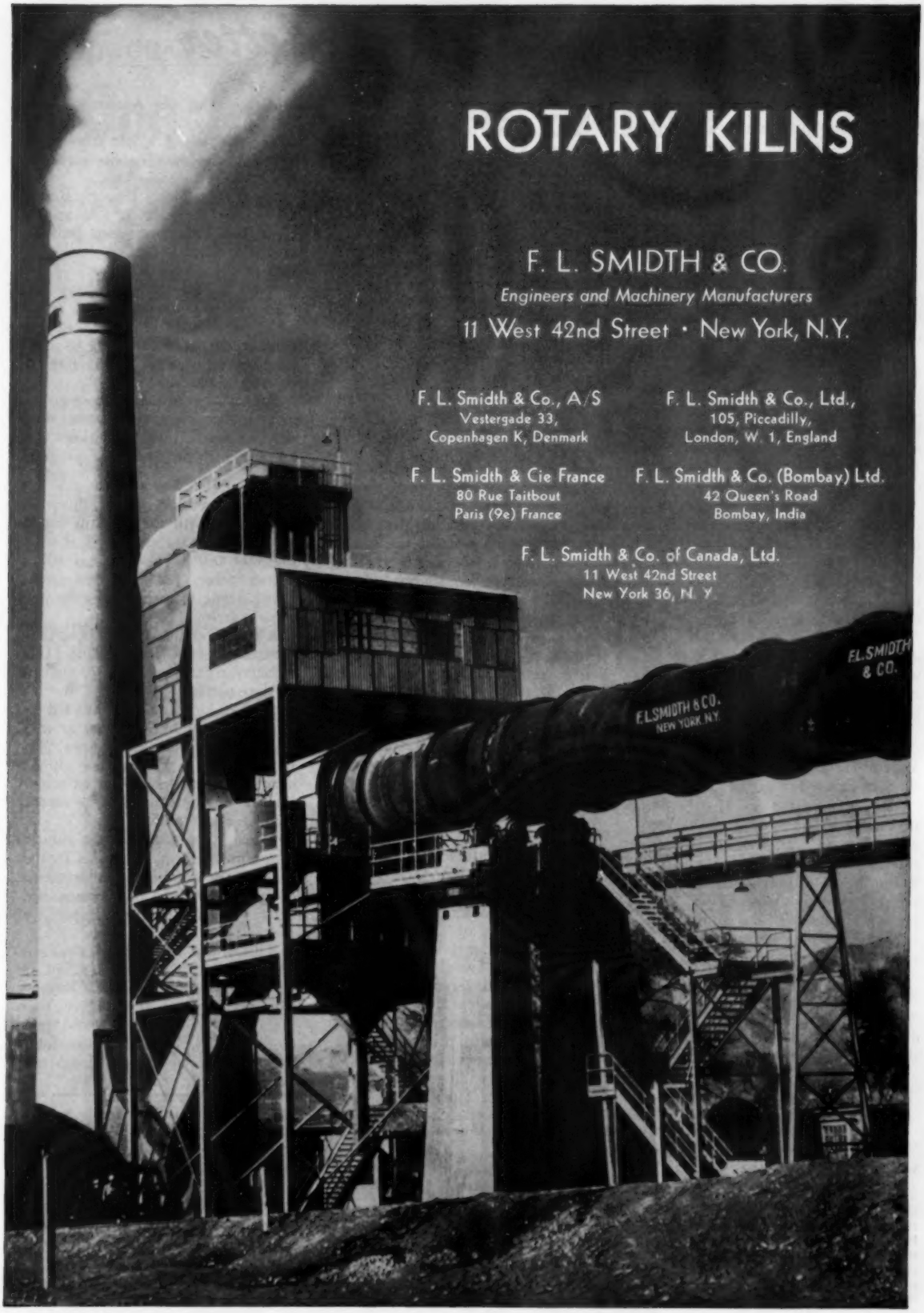
Figures were quoted which proved that toll highways and other limited-access superhighways were much safer than other highways in spite of the higher speeds permitted. The Pennsylvania Turnpike was the first example, and other similar highways merely confirmed these findings. The Pennsylvania Turnpike has also been an outstanding financial success, proving beyond question that car and truck drivers will gladly pay tolls to save time, mileage, and the added wear and tear on vehicles and drivers caused by congestion and travel on slow, dangerous highways.

LATER toll roads have only served to verify these conclusions. The only possible solution is to build highways which segregate these two types of traffic as much as possible. This means a network of east-and-west and north-and-south transcontinental superhighways with no crossroads at grade, and the least possible number of points of entry and exit. Such highways, especially if tolls are charged, discourage purely local traffic. Branching off from these superhighways should be similar but less exclusive arteries to and between large cities. Most of the present extensive but inefficient highway system could then be used almost entirely by the local traffic. The public wants and needs such a highway system.

Regardless of whether or not any of the highway proposals rejected by Congress were practical, and whether or not the methods of paying for them were fair to all highway users, a matter of such vital importance to our general welfare and progress, to our national defense, and to our driving safety should no longer be delayed. Public pressure should be brought to bear on members of Congress individually and collectively to make them come to an agreement on some acceptable plan at the earliest possible date. If no special session of Congress is called for this purpose, a definite plan must be agreed upon when the next Congress convenes.

PRODUCERS of cement, sand and gravel, crushed stone, and other materials used in highway construction should take an active part in seeing that we get the roads we need. The fact that they have a selfish interest in more highway construction should not deter them; it should be an added incentive. These men are also most familiar with the problem and, partly for selfish reasons, have been fighting for better roads while most of the rest of us have been doing nothing. Every producer should help us all, and incidentally his own business, by awakening people in his area to what is going on, and by urging them to tell their congressmen that definite action on an adequate highway program must be taken at once.

Walter E. Trauffer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Washington News Letter

Demand for Housing

NEW information about the demand for housing compiled recently by the Federal Reserve Board should make interesting reading to persons in or related to the home construction industry. The Board took both a backward and a forward look at the housing market.

The results of their historical review are summarized in the table at the bottom of the page.

This table shows a very mixed picture. The total number of houses bought reached a peak of 2,400,000 in 1951 and again in 1954. In 1951, however, less than 30 percent of those homes were new houses; in 1954, more than 40 percent were new houses.

The house building industry, which sold 700,000 new non-farm houses in 1951, never retreated very far. By 1953 it was back to the 700,000 level and by 1954 it had risen to 1,000,000, the highest level of the entire period. So far, 1955 looks as though it will equal the 1954 level. These figures quickly account for the prosperity of the house building industry, particularly when it is also noted that the average (median) value of houses has increased by three-fourths since 1949. The total amount spent for houses has more than doubled during the period.

Despite repeated dire predictions that the housing boom will have to end, the Federal Reserve Board's studies indicate that unless something drastic happens to the personal financial situations of prospective buyers or to the supply, cost, or financing of houses, that end is not in sight.

Each year since 1952 the Board has sponsored a survey in which a cross-section of consumers is queried about their buying plans, including their plans to buy or build houses.

The results of the latest survey are shown in the next column.

Percent of Non-farm Families		
	Definitely planning to buy or build in next 2 years	Planning to possibly buy or build in next 2 years
1952	6.9	7.6
1953	8.3	9.1
1954	6.5	8.2
1955	8.0	9.9

Those definitely planning to buy or build are up over the previous year and almost as high as in 1953, which created the 1954 and 1955 housing boom. If those who are less certain (*i.e.* those who are only planning *possibly* to buy or build) are added, there have never been so many families expecting to buy or build houses as there are right now. Furthermore, an additional 6 percent are planning to make major additions or repairs amounting to more than $500 to their present houses.

This information presents a very rosy picture; but the Federal Reserve Board is very careful to point out that a good part of the key to whether these hopes will be realized depends on the continuing availability of mortgage money on relatively easy terms. This matter, in turn, is related to the Federal Government's credit policy, on which it is currently walking a tight rope.

Demand for New Roads

The desire for new and better roads seems to be just as great as the desire for new and better houses; but nobody seems to be willing to pay for them.

The trucking industry and the tire and tube industry, which would seem to be the principal beneficiaries of improved highways, were the principal interests which killed the large highway program proposed in the last session of Congress. This was because these industries and their products would have been taxed to pay a large part of the cost. Incidentally, the Teamsters Union made common cause with their employers in this matter.

Only the drivers of pleasure cars appeared to be willing to pay a part of the cost of the new roads. Representatives of the American Automobile Association supported the Fallon Bill, which would have raised taxes on the gasoline the motorists buy to pay for the roads.

By now so many pressure groups are in the act, that it appears entirely likely that no road building law will come out of the next session of Congress either.

Even the farmers, who have generally been in favor of new roads, were opposed to last year's scheme because it concentrated on an interstate system of superhighways rather than rural roads.

In the long run all of these groups may realize that they were short sighted, but in the meantime they are braking the wheels of progress.

The Farm Bloc

The farm bloc, which threw its strength in with the trucking industry and other opponents of the last highway bill of Congress is still a potent force, but it seems to be losing strength faster than most people realize.

A glance at the statistics will show why. In just 15 years— since 1940 —farmers dropped from 20 percent of the voters to 12 percent. But the fact that industry has invaded an increasing number of farm areas is perhaps of equal importance. The factory out in the middle of the cornfield is no longer an extremely unusual sight. And with the factory come factory workers.

Finally, the spread of the suburbs into former farm areas has further reduced the number of Congressional districts and the Congressmen considered exclusively the property of the farmers.

This trend is likely to continue. It will have a profound effect on the balance of power in Congress. For many years there have been Republicans, Democrats, and farm Congressmen. With the farm interests losing power, partisanship may be expected to increase.

The National Fertilizer Association and the Plant Food Council, after having individually served the fertilizer industry for ten years, are now merged into one large organization called the National Plant Food Council. The two executive officers of the former two organizations were both retained and will serve the new association in equal capacities with identical titles of executive president.

Estimated Number of Purchasers of Non-Farm Houses

Year	Total	New houses		Existing houses		Average (median) value	Estimated Total Expenditure
		Number	Percent	Number	Percent		
1949	1,600,000	600,000	38	1,000,000	62	$ 5,900	$11,300,000,000
1950	2,200,000	800,000	36	1,400,000	64	8,500	20,700,000,000
1951	2,400,000	700,000	29	1,700,000	71	8,500	22,300,000,000
1952	1,700,000	600,000	35	1,100,000	65	10,800	20,100,000,000
1953	2,200,000	700,000	32	1,500,000	68	10,500	25,500,000,000
1954	2,400,000	1,000,000	42	1,400,000	58	10,500	26,900,000,000

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One Man...One Minute Product Control

Quick, Accurate Product Size Adjustment — No dismantling and no auxiliary equipment are required to change from one product size to another. Changing is instantaneous and precise with *Speed-Set* control.

Simplified Compensation for Wear—Compensating for wear on concaves and mantle is equally as fast and convenient. A push of a button on large *Hydrocone* crushers or a move of the hand control on smaller sizes does the job.

Fast Emergency Unloading and Tramp Iron Protection — If crusher stops abruptly because of power failure or other emergency, *Speed-Set* control facilitates fast clearing of crushing chamber.

How *Speed-Set* Control Works

Mainshaft assembly is supported on hydraulic jack. Oil pumped into or out of jack raises or lowers crushing mantle.

When tramp iron enters crushing chamber, oil from jack is forced into accumulator, allowing mantle to lower. Automatic reset returns cone to original setting after tramp material is passed.

For complete information, see your A-C representative or write Allis-Chalmers, Milwaukee 1, Wisconsin. Ask for Bulletin 07B7145B.

A-4478

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The new Firestone Safety-Tensioned Gum-Dipped* nylon cord body insures longer tire life and more retreads. The Firestone Safety-Tensioned Gum-Dipped* nylon body gives the greatest protection against impact breaks . . . flex breaks . . . heat failures . . . and water damage.

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Giant Capacity

Gives you far more fine crushed material per hour. Has the ideal crusher for the big 4' x 12' screen

Universal 880 Senior "R"

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The 880 Senior "R" teams a huge 48 sq. ft. screen with the biggest roll crusher ever offered, big, rugged 30" conveyors and a high capacity 1036 jaw crusher to give you a plant unequalled for high production in its weight class.

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INSULATING FIRE BRICK

for exposed rotary kiln lining...

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As a result General Refractories Company's GR-23 Insulating Fire Brick have been specified and bought for many of the new kilns* recently installed and now building in the cement industry's tremendous expansion program.

Names and locations on request

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News of the Industry

General Portland Cement To Add 2 Types of Cement At Tampa, Fla., Plant

Complete facilities for the manufacture of both plain and waterproofed white portland cements are being provided at the Tampa, Fla., plant of General Portland Cement Company and are scheduled to go into production next spring, according to Smith W. Storey, president.

Addition of white portland cement production at the Tampa plant will give the company two sources of the specialized white product, which is in high demand because of its decorative and structural qualities. General Portland's plant at Houston, Tex., has produced white portland cements for the last 15 years under the brand name "Trinity White." The Florida product also will bear this name.

The new production will enable the company to serve Florida and the Southeast from the Tampa plant and will release a greater portion of Houston production for distribution to the West to Pacific coast markets.

In addition to its Tampa and Houston facilities, General Portland operates producing plants at Dallas, Fort Worth, and Chattanooga.

Harbison-Walker Refractories Opens Plant at Leslie, Md.

According to an announcement released by Earl A. Garber, president of the Harbison-Walker Refractories Company, the firm opened a new plant at Leslie, Md., to produce silica refractories. The company's headquarters are in Pittsburgh, where it was founded in 1865 as the Star Fire Brick Company.

The new plant is a 100,000-sq. ft. standardized steel structure which was modified structurally to accommodate several elevated grinding and screening machines and one of the longest tunnel kilns in the world.

This new manufacturing unit is Harbison-Walker's 33d in this country and Canada. It is the latest major addition in a $35,000,000 expansion program launched in 1951 by the rapidly-growing concern, whose sales in 1953 totaled $78,870,000.

The plant is on a 40-acre site at Leslie, just off the Pulaski Highway, about midway between Philadelphia and Baltimore. It is on the main line of the Baltimore & Ohio Railroad, which has a spur running to the shipping department.

Longhorn Portland Cement Adds Kiln—Raises Output 1/3

Installation of a new kiln, cooler, and mill at the Longhorn, Tex., plant of the Longhorn Portland Cement Company has increased the annual output of the firm by 700,000 bbl. This is an increase in production of about one-third.

The addition, the plant's third kiln, required about seven months to complete. Annual output has been approximately 1,800,000 bbl.

Construction of a $1,250,000 shaft was recently started at Intermountain Chemical Company's trona mine near Green River, Wyo. The big shaft will ventilate new workings whose haulage ways are now being driven to a point of interception with the shaft. It will also be used in testing the resistance of concrete to sulphate attack for which study the firm received a research grant.

Natl. Slag Assn. Announces Two Winners of Trophies In 1954 Safety Competition

Trophies will be awarded to the winners in the 1954 National Slag Association Safety Competition at a meeting of that organization's Operators Committee in November or early in December. The plaques are furnished by PIT AND QUARRY.

According to an announcement released by E. W. Bauman, managing director of N.S.A., the winner of the Class A trophy is the Foamed Slag Plant of the Bethlehem Steel Company at Sparrows Point, Md. This award marks the achievements of an outstanding safety record of a total work time of 115,189 man-hours without one lost-time injury.

Winner of the Class B trophy is the Donora Plant of the Cambria Slag Company, Sharon, Pa., which reported a work time of 57,571 man-hours without a lost-time accident.

According to officials of the Southwestern Portland Cement Company of Los Angeles, this firm has placed orders to enlarge its plant at Victorville, Calif. Addition of a large kiln will increase output by 15 percent.

Coming Events

October 10-13, 1955—Las Vegas, Nev. Annual convention, American Mining Congress.

October 17-21, 1955—Chicago. 43rd National Safety Congress and exposition. Conrad Hilton, Congress, Morrison, and La Salle Hotels.

October 19-21, 1955 — Pebble Beach, Calif. Combined annual convention and operators' meeting. National Lime Association. Del Monte Lodge.

January 23-25, 1956—New Orleans. 36th annual convention, National Concrete Masonry Association. Roosevelt Hotel.

January 29-February 2, 1956—Chicago. 37th annual meeting, Associated Equipment Distributors. Conrad Hilton Hotel.

February 13-16, 1956—Chicago. 40th annual convention, National Sand and Gravel Association, 26th annual convention, National Ready Mixed Concrete Association, and combined exhibit. Headquarters, Conrad Hilton Hotel; exhibit, Coliseum.

February 15-17, 1956—Chicago. Annual convention, National Agricultural Limestone Institute, Inc. Blackstone Hotel.

February 20-22, 1956—Chicago. 39th annual convention and biennial exhibit, National Crushed Stone Association. Conrad Hilton Hotel.

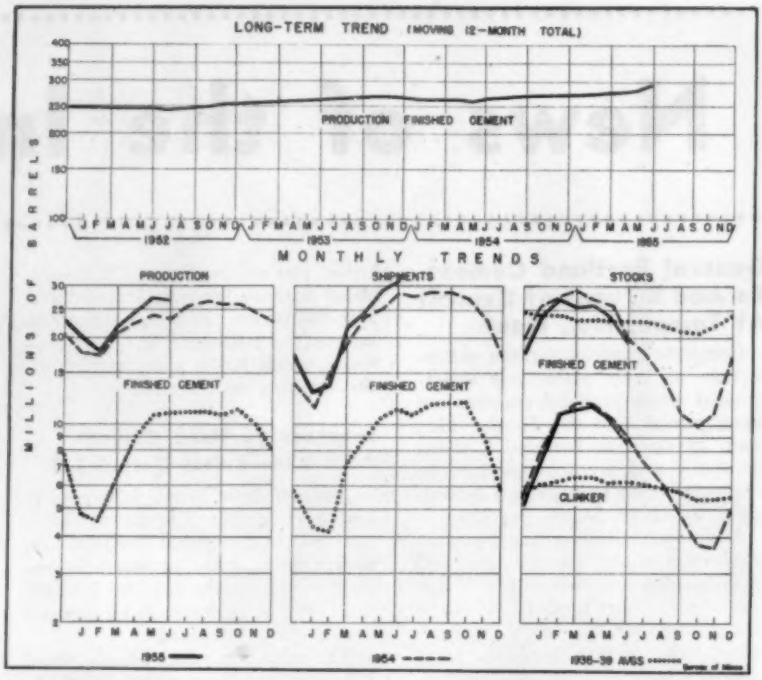
Construction in July Nears $4,000,000,000 Mark For New Monthly Record

The value of new construction put in place rose seasonally in July to a new monthly peak of nearly $4,000,000,000 and reached a record total of $23,100,000,000 for the first 7 months of the year, according to preliminary estimates prepared jointly by the Departments of Commerce and Labor. After adjustment for seasonal factors, new construction activity in July was at an annual rate of $42,000,000,000.

Most of the June-July increase (4 percent) resulted from expansion in private residential and commercial building and highway work. Outlays for almost all other types of construction remained at about their high June levels or rose slightly.

For the third successive month, total private construction reached a new high. The $2,800,000,000 total for July was 4 percent above June and 16 percent higher than in July, 1954. Public construction activity, at $1,200,000,000, was 5 percent greater than in June; it was only slightly above the level of July of last year, as gains primarily in public educational buildings, military facilities and highway work were nearly offset by a substantial drop in activity on atomic energy projects, and by smaller declines on public housing, hospitals, and conservation and development work.

Comparing the record volume for January-July, 1955, with that for the first seven months of 1954, private expenditures ($16,500,000,000) were 20 percent higher, despite declines in private school buildings, railroad, and farm construction. Public outlays ($6,500,000,000) were virtually the same, since declines in federal construction virtually equalled increases in state and local government activity.


LONG-TERM TREND (MOVING 12-MONTH TOTAL)
PRODUCTION FINISHED CEMENT
MILLIONS OF BARRELS
J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D
1952
1953
1954
1955
MONTHLY TRENDS
PRODUCTION
FINISHED CEMENT
SHIPMENTS
FINISHED CEMENT
STOCKS
FINISHED CEMENT
CLINKER
J F M A M J J A S O N D
1955
1954
1936-39 AVGS

SUMMARY—Production of finished portland cement in June, 1955, as reported to the U. S. Bureau of Mines, totaled 26,783,000 bbl.—an increase of 17 percent over tre June, 1954, figure. Mill shipments totaled 31,260,000 bbl.—an increase of 9 percent more than in June, 1954—while stocks of 18,828,000 bbl. of finished portland cement on hand June 30, 1955, were 4 percent less than on the same date last year. Clinker production during the month totaled 25,004,000 bbl.—an increase of 18 percent over the June, 1954, figure.

PRODUCTION—One hundred fifty-seven (157) plants in 37 states and Puerto Rico reported a production of 26,783,000 bbl. of finished portland cement during June, 1955, as compared to a production of 22,802,000 bbl. during the same month last year.

Clinker production during the month was 25,004,000 bbl., compared to 21,125,000 bbl. during June, 1954.

Clinker figures for 1955 are not strictly comparable with those of 1954 and earlier years because producers are now asked to report clinker in terms of the number of barrels of finished portland cement that could be produced from the quantity of clinker in question, whereas previously the unit of measure was the 376-lb. bbl.

Separate data on high-early-strength (Type III) by districts and prepared masonry cements appear in this year's reports. Production of high-early-strength portland cement in June, 1955, totaled 772,000 bbl., an increase of 36 percent over the June, 1954 production. The output of prepared masonry cement was 1,396,000 bbl. of 376 lb. each.

SHIPMENTS—Mill shipments of finished portland cement were 9 percent higher than in June, 1954, and totaled 31,260,000 bbl. This figure and the district totals that comprise it are not strictly comparable with mill shipments of previous years because they do not include, as in the past, the number of barrels of finished portland cement used in the manufacture of prepared masonry cements. The quantity so used is shown in a footnote.

Shipments in June were higher in 12 districts and lower in 8. The greatest increase was registered in the New York-Maine district, and substantial increases were made in the eastern Pennsylvania-Maryland, Michigan, northern California, western Missouri-Nebraska-Oklahoma-Arkansas districts, and in Puerto Rico. The greatest decrease was in the Illinois district.

Mill shipments of high-early-strength cement in June, 1955, totaled 1,124,000 bbl. Half of these shipments were from mills in the eastern Pennsylvania-Maryland, and Michigan districts.

Mill shipments of prepared masonry cement in June, 1955, totaled 1,576,000 bbl. Nearly half of these shipments were from mills in four districts—eastern Pennsylvania-Maryland, Indiana-Kentucky-Wisconsin, Michigan, and Virginia-Georgia-Florida-Louisiana-South Carolina-Mississippi. Prepared masonry cement data are shown in equivalent barrels of 376 lb. each to maintain uniformity with the portland cement data.

STOCKS—Mill stocks of 18,828,000 bbl. of finished portland cement were on hand June 30, 1955—4 percent less than on June 30, 1954. Stocks of clinker on hand at the end of June, 1955, were 8,478,000 bbl.—a decrease of 1 percent less than the stock on hand June 30, 1954

Peerless Starts Third Plant In Michigan Expansion Move

Peerless Cement Corporation, Detroit, Mich., recently announced the start of construction of a third cement plant which will provide 1,000,000 bbl. to the Michigan market on scheduled completion in 1956. According to the statement by W. C. Russell, president, the company now supplies 25 to 30 percent of the portland cement used in the state from its two plants in Detroit and Port Huron.

The new Detroit plant, to cost $7,500,000, added to the expansion plans of the six other cement manufacturers in Michigan, will increase the total production by 4,500,000 to 5,000,000 bbl. by 1957, or by some 33 percent over present supplies. Mr. Russell expressed confidence that this supply will adequately take care of the demand for cement for highway, airport, turnpike, and other public works programs planned.

Gelbman, Inc., Pelham Manor, N. Y., has announced plans for the construction of a plant to manufacture lightweight concrete aggregate from slate. The plant is to be located in Pen Argyl, Pa., and will be operated under the name of Expanded Aggregates Corporation.

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Save first, and always, with a Dodge truck! New low prices bring famous Dodge dependability within the reach of every truck owner. What's more, Dodge work-proved long life and low operating costs mean extra savings over the years.

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Models	Dodge saves you
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½-TON PANEL	$18 to $123
¾-TON EXPRESS	$18 to $117
¾-TON STAKE	$39 to $137
1-TON EXPRESS	$63 to $157
1-TON STAKE	$97 to $188

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TRUCKS
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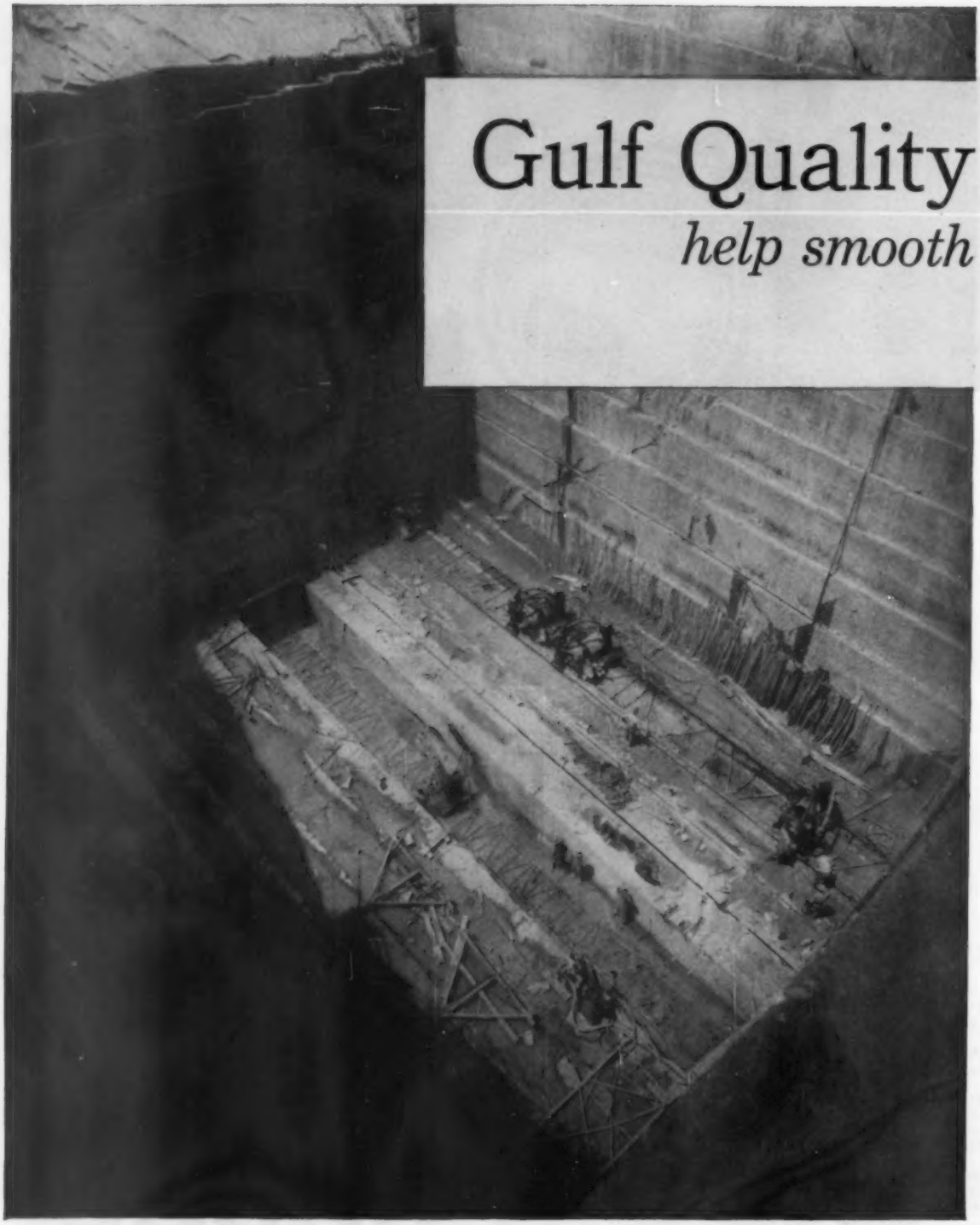
Gulf Quality
help smooth



Huge blocks of hard stone, or serpentine tremolite, as it is known in the trade, are whisked by giant cranes from the bottom of this deep quarry onto waiting trucks. The trucks then haul it to the Alberene Stone Corporation's processing plant where it is cut into different sizes and polished. The majority of the stone from this quarry is used architecturally. Gulf products are used in the processing plant, as well as in quarry equipment.

Lubricants and Fuels

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Take stock, as this progressive firm has, of the many advantages Gulf provides to help you get a smoother over-all operation and lower maintenance costs. (1) Lubricants that give an extra margin of protection against wear; (2) fuels that burn evenly and completely with fewer engine deposits; (3) expert petroleum engineering counsel; (4) prompt delivery service.

Call in a Gulf Sales Engineer and discuss with him how Gulf products and fine service can benefit your operation. Check the telephone directory for the number of your local Gulf office.

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GULF THE FINEST PETROLEUM PRODUCTS FOR ALL YOUR NEEDS

Wilson P. Foss Jr., chairman of the board of New York Trap Rock Corporation, and pilot C. W. Barolet, in the firm's new helicopter which has been purchased to reduce travel time between the company's four plants.

N. Y. Trap Rock's Helicopter Cuts Executives' Travel Time

New York Trap Rock Corporation recently announced the purchase of a helicopter for use by the executive personnel supervising operations at the company's four plants at Haverstraw, Clinton Point, Tompkins Cove, and Verplanck, N. Y. In making the announcement, Wilson P. Foss, III, president of the company, declared that all these plants were operating at or near capacity to meet the demands for crushed stone and that the new method of travel will greatly reduce the travel time between plants.

Estimating that a full day was needed to cover the four plants by automobile, Mr. Foss stated that all may now be covered quite thoroughly in a morning's time. The distance between the Haverstraw and Verplanck plants—requiring approximately 45 minutes by car—can now be covered by helicopter in seven minutes. Travel time of only 20 minutes is needed to go from the New York City landing platform at Battery Place to the Haverstraw plant.

The helicopter, a model 47-G made by Bell Aircraft Co., has a range of 150 miles, a cruising speed of 65 m.p.h. and a service ceiling of 16,000 ft. It is equipped with floats for landing on water or land. It will be piloted by William Barolet, a former fighter pilot with the 6th Air Force. New York Airways will supervise maintenance of the helicopter, which will be given daily mechanical inspection.

Lewis Named Chief Engineer Of National Slag Association

D. W. Lewis, formerly research engineer, Indiana Joint Highway Research Project, and associate professor of highway engineering, Purdue University, joined the National Slag Association as chief engineer on August 1.

During his nine years on the staff of Purdue University Mr. Lewis was actively engaged in the field of aggregate and concrete research. He holds membership in the American Concrete Institute, the American Society for Testing Materials, the Highway Research Board, and the American Society of Civil Engineers (assoc. member), and is registered as a professional engineer in the state of Indiana.

In his capacity as chief engineer, with headquarters in Washington, D. C., Mr. Lewis will serve the association principally on matters of an engineering nature involving slag as a mineral aggregate. He will work closely with E. W. Bauman, managing director, and he will also continue his activities on the technical committees as a representative of the slag industry.

D. W. Lewis

E. P. Newhard Retires From Penn-Dixie Post After 45-Year Service

E. P. Newhard, vice-president and operating manager of the Penn-Dixie Cement Corporation, retired on September 1 from his duties after 45 years with the firm and preceding companies.

E. P. Newhard

Mr. Newhard, after specialized training at Muhlenberg College, entered the cement industry with the Atlas Portland Cement Company. He spent several years as chemist with the Giant Portland Cement Company before joining the Clinchfield Portland Cement Company as chief chemist in 1918.

He served Penn-Dixie from 1926 to 1932 as chief chemist of its southern division with headquarters at Chattanooga. For the ensuing 12 years Mr. Newhard was superintendent of the plant at Clinchfield, Ga., and from 1944 to 1948 general chemist in charge of chemical control and research, with headquarters at Nazareth, Pa. He was appointed general operating manager in 1948 and a vice-president of the company in 1950.

U.S. Gypsum Co. Perlite Mill Opened at New Mexico Site

United States Gypsum Company has begun operation of a new perlite producing plant located at Grants, N. M.

Perlite is quarried from a deposit about nine miles from the mill, transported to the mill by truck, crushed, dried, and screened to required specifications. It is then transported to other plants for processing into expanded perlite for use in the company's products.

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Wherever these "extended engagement" pulverizers are used for direct-firing of rotary kilns they have established long and impressive performance records.

BECAUSE:

1. Grinding zone has no bearings or parts to be lubricated.
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3. Grinding elements are made of wear-resistant, long-life metals, with grinding balls held to close spherical tolerances.
4. Fully-enclosed reduction gear drive, with anti-friction bearings, and integral pump for automatic pressure lubrication.
5. Tramp iron and pyrites are automatically rejected, usually without interruption of service.

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BOILER DIVISION

C-212

Lone Star's Expansion Includes 4 New Projects—Total to Reach $57,000,000

Rounding out an extensive expansion program, the Board of Directors of the Lone Star Cement Corporation has authorized enlargements at the company's Hudson, N. Y., Dallas and Houston, Texas, plants, and a 2,000,000-bbl. plant to be built near Lake Charles, La., according to an announcement released by H. A. Sawyer, president.

This program, which involves a present expenditure of $35,000,000, is in addition to recently announced enlargement plans at five other Lone Star plants, and brings the cost of the company's present program to a total of $57,000,000. An increase of 10,200,000 bbl. in cement capacity will result from the projected plans.

This makes a total outlay of $128,000,000 for expansion and modernization from 1946 to 1956, with a resulting increase of 19,200,000 bbl. in capacity, of which 17,000,000 bbl. is in Lone Star's domestic territory. This current enlargement program increases the capacity of the system as a whole to a total of 44,500,000 bbl.—32,600,000 bbl. for U. S. consumption.

The Lake Charles plant will be built on a 350-acre site on the west shore of the Calcasieu River, 6 miles south of Lake Charles, at a cost of $14,000,000. Slated for completion in late 1956, this plant, 19th in the Lone Star system, is being designed for shipment by both rail and water, to serve a fast-growing area.

Lake Charles was selected as the new plant location because it is about midway between the company's plants at New Orleans and Houston. Provision will be made for facilities to double production when the needs of cement users in this area warrant further expansion.

The new plant will use the wet-blending process of manufacture and will have two large inclined kilns each 11 ft. 6 in. in diameter by 450 ft. in length, equipped with high-efficiency electrical dust collectors of the latest type. They will rotate at the rate of 1 r.p.m.

Raw materials will consist of oyster shell, delivered to the plant by barge; clay and sand are available on or near the plant site. Lone Star was the first to use oyster shell successfully as a raw material for the production of quality portland cement, at its Houston plant about 40 years ago. The plant will be constructed entirely of reinforced concrete and will be modern in every respect.

There will be 14 silos, each 26 ft. in diameter by 120 ft. high. Each silo will hold about 13,000 bbl. of cement.

The enlargement program at Hudson, N. Y., will increase the capacity of that plant by 50 percent, or 1,000,000 bbl., to a total of 3,000,000 bbl. annually, better to serve the New York and New England markets.

A fifth kiln will be installed, together with a new crushing plant, raw and finish grinding mills, dust collectors, a coal-handling system, raw storage and power plant extensions, and other related facilities. This enlargement program has been planned with a view to maintaining full-scale production during construction.

At Dallas annual productive capacity will be increased by 50 percent, or 1,400,000 bbl., to a total of 3,700,000 bbl. by the installation of two additional kilns, as well as grinding equipment and other auxiliary structures. High-efficiency electrical dust collectors will be installed in connection with the new kilns and also on the four present kilns.

The Dallas plant was the first mill in the Lone Star system, and it has been in continuous production for more than half a century, having been completely rebuilt within that period. To supplement the raw material deposits at the present Dallas quarry, Lone Star is acquiring additional limestone deposits on a 746-acre site located 4½ miles from the Dallas plant. The tract is estimated to contain limestone sufficient for the manufacture of an additional 300,000,000 bbl. of cement.

Plans for enlarging the Houston plant call for an increase in the annual capacity of that plant by over 50 percent, or 1,100,000 bbl., to a total of 3,200,000 bbl.

A third large kiln will be installed, together with additional raw and finish mills, clay-handling and storage equipment, a slurry basin, and related installations.

With the completion of the current expansion program every Lone Star operation will have been enlarged and modernized, and annual productive capacity (19 plants) will be boosted by 19,200,000 bbl. (76 percent) to a total of 44,500,000 bbl. annually.

Officials of International Minerals & Chemical Corporation recently announced that the sulphuric acid operation of the Bonnie phosphate chemicals plant near Barstow, Fla., was damaged in a dynamite blast. Over $50,000 damage to the central control room resulted from the explosion, which is the latest of several acts of violence committed during the current strike.

January-June Lime Sales Below 1954 First-Half Figure

Domestic sales of open-market lime totaled 786,636 short tons in June, according to reports of producers to the Bureau of Mines, United States Department of the Interior.

Sales of building and refractory lime increased compared to the previous month, whereas decreases were noted for agricultural, chemical, and other industrial uses. The table shows sales by types and major uses from January through June.

Table 1.—Lime Sold by Producers[1] in the United States, in Specified Periods of 1954-55, by Types and Major Uses, in Short Tons

	May	June		January-June	
	1955	1955	1954	1954	1955
By types:					
Quicklime	616,063	607,405	460,472	2,714,761	1,821,446
Hydrated lime	184,452	179,231	161,185	932,417	542,541
Total lime[2]	800,515	786,636	621,657	3,647,178	2,363,987
By uses:					
Agricultural:					
Quicklime	13,829	3,691	2,619	39,837	30,884
Hydrated lime	23,866	13,529	14,038	118,218	65,139
Total	37,695	17,220	16,657	158,055	96,023
Building:					
Quicklime	[3]16,712	24,891	18,193	93,959	57,812
Hydrated lime	95,198	97,409	88,434	460,449	282,418
Total	[3]111,910	122,300	106,627	554,408	340,230
Chemical and other industrial:					
Quicklime	[3]382,173	371,269	290,109	1,713,835	1,122,305
Hydrated lime	65,388	68,293	58,713	353,750	194,984
Total	[3]447,561	439,562	348,822	2,067,585	1,317,289
Refractory (dead-burned dolomite)	203,349	207,554	149,551	867,130	610,445

[1]Also includes a small quantity of captive tonnage (6-7 percent of the total reported herein) to maintain comparability with the annual lime statistics. The monthly canvass excludes the output of plants producing less than 10,000 tons a year.
[2]Approximately 60 percent of lime produced is high calcium and 40 percent high magnesium.
[3]Revised figure.

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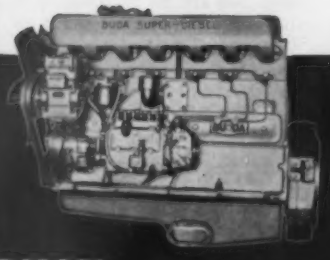
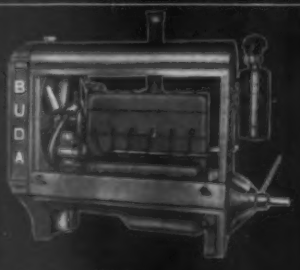


DIESEL
21 Models
9 to 516 HP



GASOLINE
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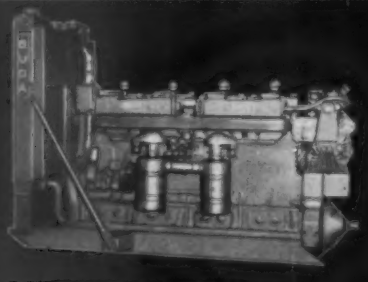

NATURAL GAS
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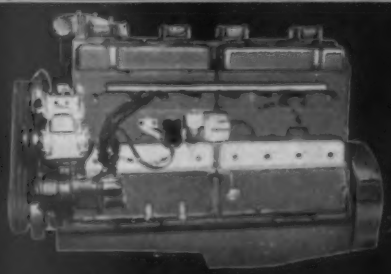

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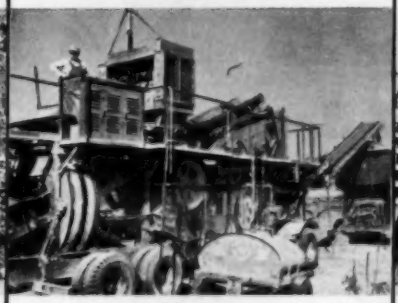
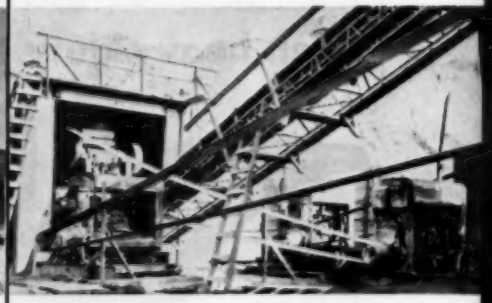
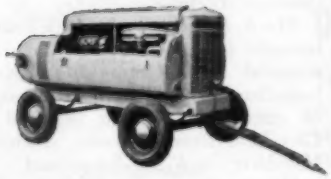


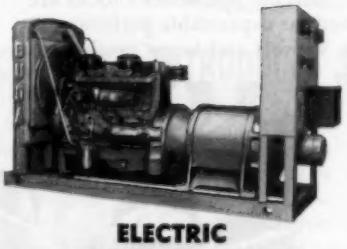
CRUSHERS



QUARRY EQUIPMENT



COMPRESSORS



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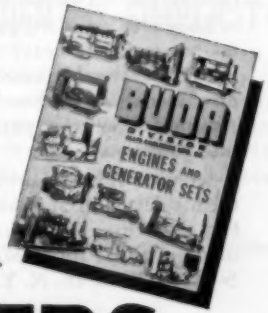

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Harry F. Howard Loses Life In Nebraska Highway Crash

Harry F. Howard, who was for eight years associated with PIT AND QUARRY publications in the subscription sales department, was killed in an automobile accident several weeks ago.

Mr. Howard was driving on a highway near North Platte, Nebr.,

Harry F. Howard

when the accident occurred. There were no witnesses, but it is thought that Mr. Howard's car was forced off the road, causing it to crash into a pole. He was found several hours later by a highway patrolman, who stated that death had probably been instantaneous.

Mr. Howard, who was 61, was born in Buffalo, N. Y., and lived in Chicago. He is survived by two sons. Burial was in Troy, N. Y.

Cleveland Gets 7th Cargo Of Foreign Made Cement

At Cleveland, Ohio, the seventh cargo of foreign cement was unloaded recently as the current cement shortage continued.

The *S. E. Teeswood*, a British ship, brought in 1,100 tons of the rare material from Cornerbrook, Newfoundland. In previous weeks cargos of cement have been received in Cleveland from Toronto, Antwerp, Hamburg, and Newfoundland.

Despite the consistently increasing rate of cement production in the United States and the large-scale expansions which are in progress, extremely high construction demands continue to clean out all reserves.

A $200,000 modern concrete building for housing the lockers and showers of workers is under construction at the Crestmore, Calif., plant of the Riverside Cement Company.

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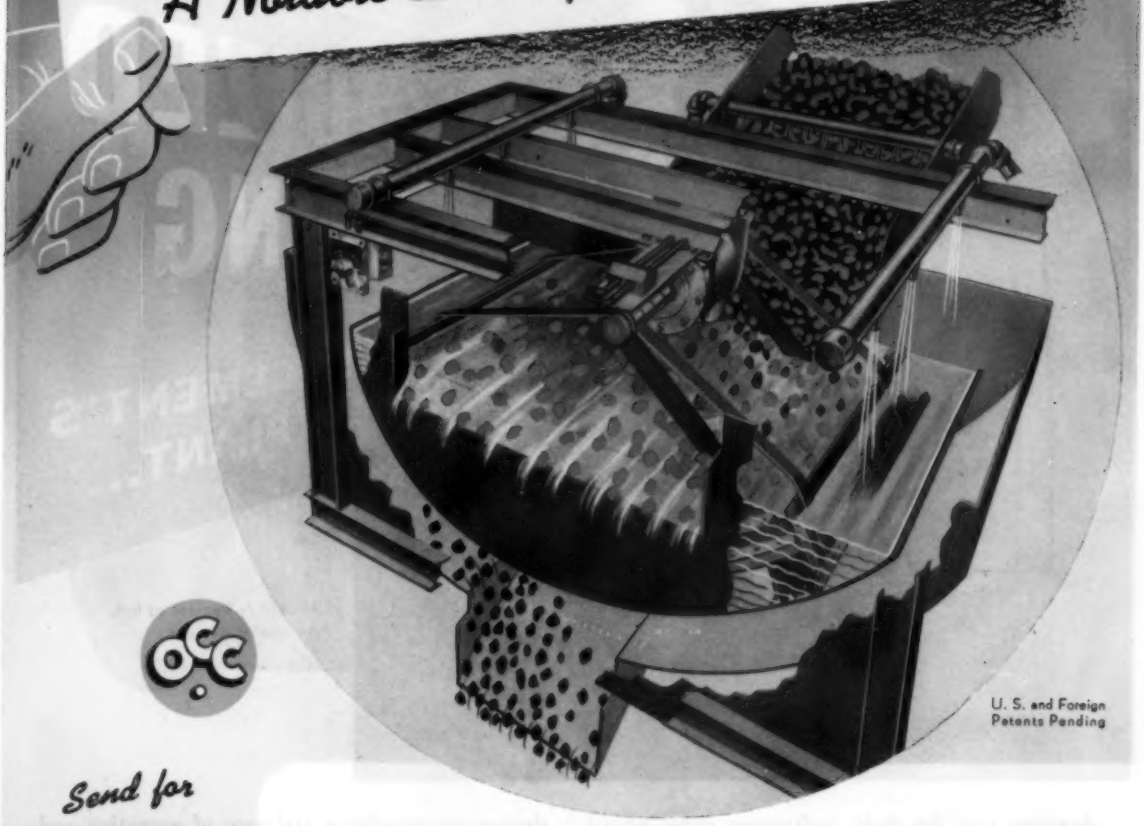
THE NEW 'OCC' VESSEL

A Notable Development in HMS



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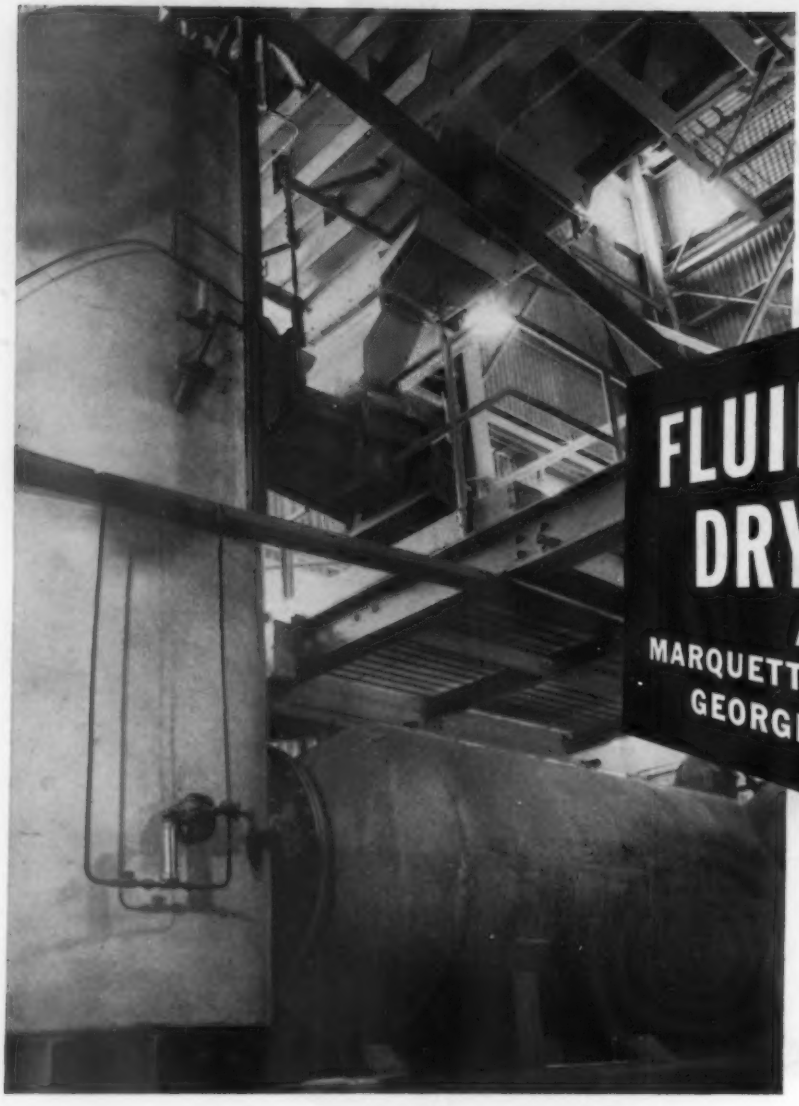

FLUIDIZED DRYING AT MARQUETTE CEMENT'S GEORGIA PLANT...

FluoSolids Reactor at left, air heater at right.

Another first for fluid techniques came about early in 1955, when Marquette Cement Manufacturing Company started up this FluoSolids System at their Rockmart, Georgia Plant. Designed to dry ⅝" limestone containing 3.5% moisture, the system processes 40 tons per hour of feed to the raw mills. Compared with the conventional dryer which it replaced, the FluoSolids System has greatly reduced labor and fuel costs at the same time saving considerable floor space.

Other advantages of the FluoSolids System for drying are simplicity and ease of operation and low maintenance due to absence of moving parts in contact with abrasive dust. Start-ups and shut-downs present no problem and the system can produce a dry limestone product from which fine clay has been separated.

For dry process cement manufacturers, fluidization represents a new and better method of de-dusting and drying limestone and cement rock.

For more information write for a copy of Bulletin No. 7502, Dorr-Oliver Incorporated, Stamford, Conn.

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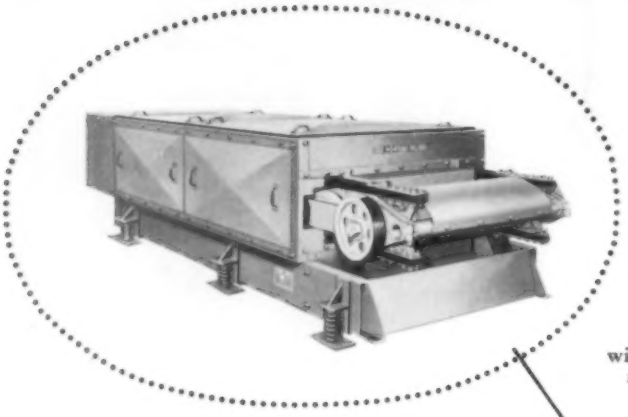

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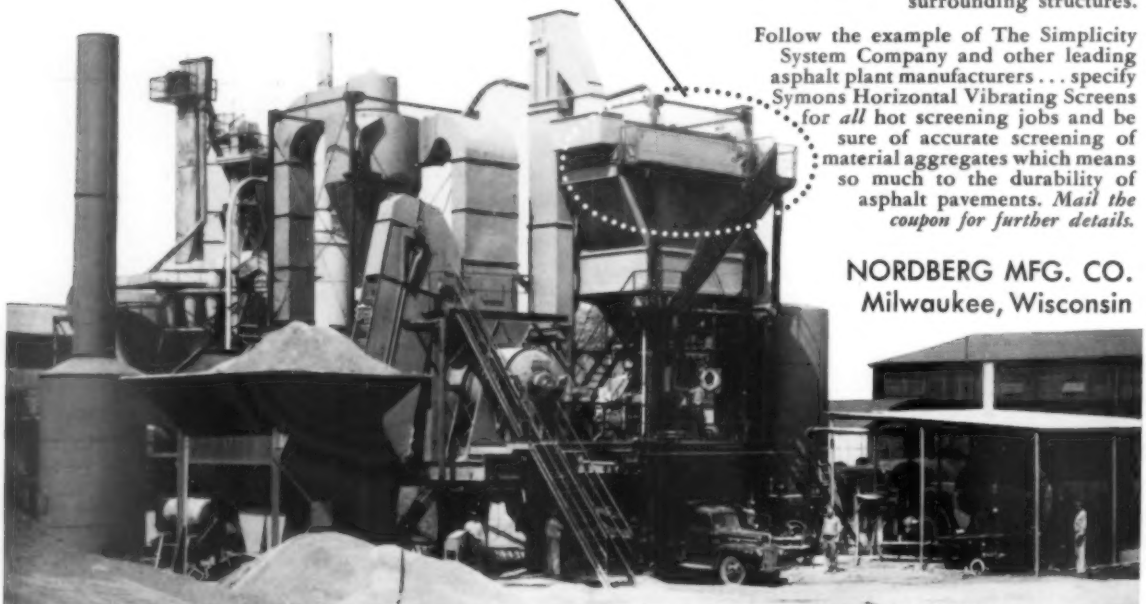

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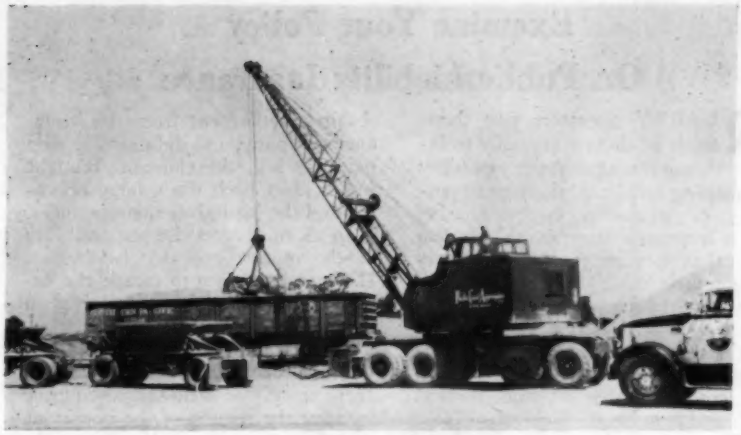
Industrial Minerals Division Of International Minerals Shows Consistent Growth

Annual statistics compiled by the International Minerals and Chemical Corporation state that sales and profits of its Industrial Minerals Division were higher last year than a year ago.

International's Industrial Minerals Division, composed of the Consolidated Feldspar Department, the Eastern Clay Products Department, and the Perlite Department, now numbers 25 plants within its framework.

During the last year International acquired Sonsel Refractories, Inc., Brighton, Mich., which produces silica and zirconia refractories; other facilities added by the company last year include the United States Mining Corporation, Big Pine, Calif., and Peerless Perlite Company, Inc., Los Angeles.

At Blue Mountain, Ont., Canada, International has begun the construction of a $1,200,000 nepheline syenite plant. Reserves are reported to be adequate for requirements in the foreseeable future.



• The Eliot, Calif., plant of the Pacific Coast Aggregates Corp. is one of the largest in the country, with a capacity of over 1,000 tons of sand and gravel per hour.

The stockpile area necessary for so large an operation covers many acres, and highly maneuverable equipment is required to do the necessary rehandling of material. Much of this work is being done by an Industrial Brownhoist rubber-mounted crane which is used for rehandling to and from stockpiles and cars and to trucks. A similar crane of the locomotive type is used wherever the tracks permit.

Mexico's Cement Industry Shows Consistent Growth

Production of cement in Mexico has tripled in the last 15 years, according to the Federation of National Chambers of Commerce, as reported in its Weekly Business Letter.

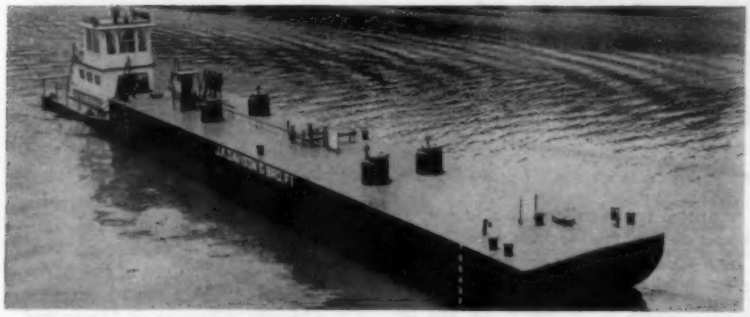
The republic's cement output has risen from 485,000 tons in 1940 to 1,765,000 tons last year. According to statistics of the Cement Industry Chamber, production of this basic building material continued to rise last year while other industrial activities showed declines.

Heaviest cement producer in Mexico today is La Tolteca, with an output of 263,293 tons in 1954. The Cementos de Mixcoac firm, in second place, produced 226,090 tons. Both of these firms, jointly accounted for nearly one-third of all national cement production.

The Monterrey cement plant produced 161,630 tons; Cementos Anahuac, 134,200 tons; Cementos Leon, 131,398 tons; and Cementos de Orizaba, 115,033 tons.

The Federation revealed that there has been no expansion in the number of cement plants in Mexico in recent years; increased production has been achieved through expansion of existing facilities.

A $25,000 loss was recently sustained by the General Crushed Stone Company of White Haven, Pa., when the top two floors of the breaker house and a large part of the power and conveyor systems were badly damaged by fire. It was assumed that the fire originated in a heavy wiring circuit.



• A floating service station—that's the actual use for this 100- by 18-ft. vessel. Manufactured by the Dravo Corporation, Pittsburgh, for J. K. Davison and Bro. of the same city, the barge will be used as a floating 82,400-gal. fuel supply station for the diesels of a Davison Company dredge.

William P. Drake Named To Succeed G. B. Beitzel As Pennsalt President

William P. Drake, former executive vice-president, has succeeded George B. Beitzel as president of the Pennsylvania Salt Manufacturing Company, according to an announcement released by the latter. Mr. Beitzel will continue his association with the company as a member of its board and in addition will serve as chairman of the board of the Pennsalt International Corporation, a subsidiary.

At 42 years of age, Mr. Drake will be the youngest president in Pennsalt's 105-year history, and with 21 years' service prior to assuming office, will have longer company experience than all but one of his 13 predecessors.

In 1952 he represented his industry in the Office of Price Stabilization as director of the rubber, chemicals, and drugs division. When Pennsalt decentralized its operations in 1954, Mr. Drake became general manager of the company's largest operating unit, the Industrial Chemicals Division. His assumption of complete responsibility for the company's multi-plant operations followed the relocation of its executive offices to Three Penn Center Plaza, Philadelphia.

The public relations and information office of Cementos Anahuac, S. A., recently announced its new Mexico City address as: Insurgentes 432, Esq. con Tlaxcala, Mexico, D. F. Cable address: Cemaucsa.

Examine Your Policy On Public Liability Insurance

QUARRY operators pay thousands of dollars annually to insure themselves against the possibility of causing accidental damage to persons or property. In purchasing such insurance they should be certain that they are receiving the coverage they think they are, and, at the same time, they should buy what they need. Several recent court actions indicate that in many instances this coverage has not been as comprehensive as the insured believed it to be.

Two recent law suits, involving explosives users and an explosives manufacturer, illustrate an all too common chink in the armor of insurance protection. Both suits alleged vibration damage as a result of blasting operations conducted by the user with the assistance of a field representative of the powder company. In each case the operator's insurance carrier refused to settle the claim on the ground that the risks covered by the policy did not include blasts made with the assistance of a powder company representative. Because he was unable to obtain a settlement from the insurance company, and did not care who paid the bill, the claimant brought suit against both the quarry operator and the explosives manufacturer.

In all such cases the responsibility of the quarry operator is obvious. He buys insurance to escape the expense and the headaches involved in settling damage claims.

The responsibility of the explosives manufacturer is less clear cut. In fact, since the field representative acts (at the request of the operator) merely to assist and advise, the "loaned servant" relationship can usually be established in court. Thus the explosives manufacturer is released from any liability, and the quarry operator is held responsible for the entire damages awarded.

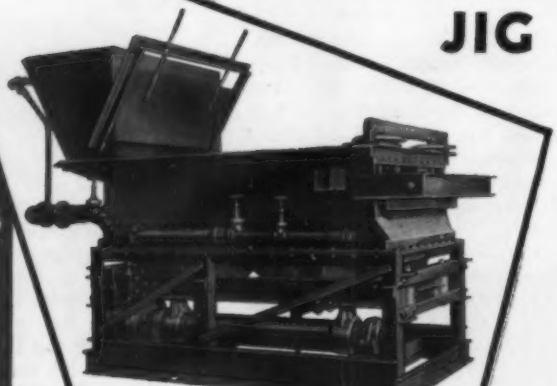
Such situations can be avoided. Every quarry operator should ascertain the exact extent of his public liability insurance, especially if he utilizes the assistance of representatives of explosives manufacturers in the planning, loading, and firing of blasts. If his present policy does not operate to discharge claims resulting from such blasts, the operator can amend it in two simple steps.

First, he should execute an agreement establishing the capacity of the powder company representative on the job. Second, he should have this agreement endorsed on his public liability policy in order to assure coverage of the additional risk.

The National Bureau of Casualty Underwriters has established recommended "guide" rates for this additional coverage in the following base amounts: $74.25 for $100,000/$300,000 bodily injury and $25,000/$50,000 property damage and $88.85 for $200,000/$400,000 bodily injury and $50,000/$100,000 property damage. Since many companies pay a premium of $3,000 to $4,000 annually for comprehensive general liability, this small additional premium for assumed liability is just a drop in the bucket.

In the cases mentioned above one operator had signed no agreement; and although the second operator had signed the agreement, he had not had it endorsed on his insurance policy. Both steps are essential to assure full coverage, and to make certain that this liability insurance does not turn out to be no insurance at all.

THE MECKUM SAND AND GRAVEL JIG



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Illinois Geological Survey Observes 50th Anniversary

Fifty years of research, publication, and public service on the coal and other mineral resouorces of Illinois will be commemorated by friends and "alumni" of the State Geological Survey, industrial leaders, and delegates of universities and colleges, on October 11, 1955, in Urbana-Champaign.

The steady development of the Illinois Survey since 1905 has been phenomenal among the state surveys of the country. It was recently climaxed by the construction of the Natural Resources Building, the Experimental Research Laboratory, and accessory units, all located on the South Campus of the University of Illinois, at a total cost of about $3,500,000. Approximately 40 laboratories are specially equipped to develop the Survey's information obtained from field investigations and mapping.

Speakers at the anniversary celebration will include Morris M. Leighton, chief emeritus of the Survey; J. R. Van Pelt, president of the Montana School of Mines and director of the Montana Bureau of Mines and Geology, and Norman J. Dunbeck, vice-president, International Minerals and Chemicals Corporation.

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TELSMITH

designed Miami plant of IDEAL Crushed Stone Co., produces 400 tons per hr. crushed limerock and sand.

Telsmith 30" x 25' Twin Screw Sand Classifier.

•

Telsmith 5' x 12' double deck special heavy-duty Vibro-King Screen.

• With a capacity of over 400 tons per hr; 60% rock, 40% sand; this Telsmith-designed plant makes 6 sizes: ¾" to 2½" ballast; 1"-¾", ¾"-½", ½"-⅜", ⅜"-3/16" rock; 3/16" sand. A 4½-yd. dragline digs the raw material; self-dumping barges transport it to plant.

• Ballast goes to railroads. Aggregate qualifies for Florida State, County, and City specs; U. S. Army Engineers; ready-mix, concrete-block, and concrete pipe plants. Send for Bulletin 266.

Q-32

PLANT EQUIPMENT—Two 60" x 8' Heavy Duty Plate Feeders • 5' x 12' Special Heavy Duty Vibro-King Scalper ahead of 30" x 50" single roll primary crusher • 5' x 12' 2-deck Vibro-King Scalper ahead of reversible impactor secondary crusher • 5' x 12' 2-deck and 5' x 14' 3-deck Vibro-King Finishing Screens for rock sizing • 2' x 8' 1-deck Vibro-King Screen for fine sand • 30" x 25' Twin Screw Sand Classifier for coarse sand • 24" x 20' Single Screw Sand Classifier for fine sand • All Telsmith except crushers.

SMITH ENGINEERING WORKS

504 E. CAPITOL DRIVE **MILWAUKEE 1, WISCONSIN**

Representatives in Principal Cities in All Parts of the World • **Cable Address: Sengworks, Milwaukee**

Illinois Firm Boosts Output With Suction Dredge Device

With the installation of a suction dredge agitator, the South Beloit Sand Company, South Beloit, Ill., has overcome severe dredging problems and boosted its output by 50 percent over last year.

According to the plan operator, the firm was using an 8-in. plain suction dredge last year—and losing money when production could not keep pace with sales. Production was lagging because there were too many delays in dredging time when the plain nozzle became clogged with oversized stones and stumps. In addition, the plain nozzle was unable to penetrate the compacted deposit.

This suction dredge agitator is used by the South Beloit (Ill.) Sand Company to speed up its dredging production.

The situation was so serious that the owner would have discontinued the hydraulic dredge this year if he had not found a way to increase production.

In March of this year a Model 8-10 Agipeller was installed on the 8-in. dredge which was used last year. Working in the same deposit and operating at the same speed as last year, the dredge pump is now delivering more material per day because of the steadier and more continuous feed of the material into the suction pipe.

As the plant operator pointed out, the Agipeller permits steady production hour after hour. It crushes any stones or debris caught in the nozzle and pushes aside water-logged timbers. This is accomplished by rows of manganese-steel teeth which sweep back and forth in front of the suction nozzle, butting and loosening compacted deposits and pushing aside large objects to keep the nozzle clear.

If tramp iron or any other obstruction becomes wedged in the nozzle, the Agipeller automatically reverses itself to avoid damage.

This device, which is capable of digging to a depth of 75 ft. below water level, is an oscillating type of agitator activated by hydraulic power from the deck of the dredge. The hydraulic pump of the power unit may be direct-connected to a motor, or run off a jack shaft by V-belt drive. The Agipeller is distributed by the W. H. Pfarrer Company, 211 West Wacker Drive, Chicago, Ill.

According to an official release issued by the Associated Equipment Distributors, the national trade association of the construction equipment industry, the 37th annual meeting of the organization will be held the week of January 29 through February 2, 1956, at the Conrad Hilton Hotel in Chicago. More than 3,000 distributors and manufacturers of construction equipment are expected to attend the sessions.

Headley Sand & Gravel Co., Inc., Webster, N. Y., has purchased property in Mendon, N. Y., to be used for a new screening and washing plant, according to an announcement released by Clarence L. Cudebec, president. The company paid $55,000 for 90 acres and a house.

A Lincoln speeds repairs...
to cut costly downtime

Contractors count on Lincoln "Shield-Arcs" to keep equipment operating . . . at a profit.
They choose Lincolns because:

1. "Shield-Arcs" are reliable.
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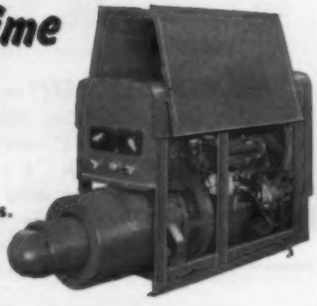
Write for Bulletin 1337 on Lincoln "Shield-Arc" DC Engine-Driven Welders.



THE LINCOLN ELECTRIC COMPANY
Dept. 5205 • Cleveland 17, Ohio
THE WORLD'S LARGEST MANUFACTURER OF ARC WELDING EQUIPMENT

"Eucs" pace production at Nelson Crushed Stone Ltd.

Powered by a 300 h.p. engine with 10-speed transmission, the Model 31 TD Rear-Dump "Euc" has a top travel speed of 32 m.p.h. with full payload . . . one of the reasons "Eucs" haul more tonnage at lower cost.

The limestone quarry and plant of Nelson Crushed Stone Ltd., north of Hamilton, Ontario, is one of Canada's newest and most modern operations. This stone plant, with a capacity of more than 500 tons per hour, was designed for maximum efficiency and flexibility—it can produce virtually any size stone.

Three 22-ton Rear-Dump "Eucs", loaded by a 2½ yd. shovel, haul dolomite to a primary crusher about ¼ mile from the face. Equipped with quarry bodies having flared sides that facilitate loading and minimize spillage, these "Eucs" have 300 h.p. engines and 10 speed transmissions.

Rear-Dump Euclids are standard off-the-highway hauling units in mines and quarries because of their ability to stay on the job year after year with low maintenance cost. For a production and cost estimate on your operation get in touch with your Euclid dealer . . . there's no cost or obligation.

Rugged construction of the body and frame enables "Eucs" to withstand the impact of loading rock and other heavy excavation with large loading equipment. Here a 2½ yd. shovel loads 22 tons of dolomite for haul to the primary crusher.

EUCLID DIVISION GENERAL MOTORS CORPORATION, Cleveland 17, Ohio

Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE

GM GENERAL MOTORS

Use of Industrial Explosives Declines from 1953 Record

The amount of explosives used industrially throughout the nation in 1954 declined 9 percent compared with the previous year, according to the U. S. Bureau of Mines. During 1954 the consumption amounted to 719,723,169 lb., whereas 790,810,690 lb. (a record high) was consumed in 1953.

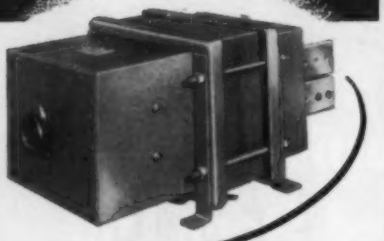
Black blasting powder, in granular form, was the only type of explosive for which an increase in use was reported, increasing 24 percent over 1953 and due almost entirely to its greater use for railway and other construction work. Decreased consumption of high explosives, which includes high explosives other than permissibles and also permissibles, was due primarily to the reduction in coal output. Liquid oxygen, confined almost entirely to the mining of coal, also decreased (21 percent) compared with 1953.

Stone quarry and the nonmetal-mining industries required 3 percent less explosives in 1954 than in the preceding year. Of the six states (Pennsylvania, Ohio, Illinois, Missouri, New York, and Michigan) consuming the greatest amounts of explosives in quarrying and nonmetal mining in 1953, only Missouri and New York consumed a greater amount in 1954. Quarries and nonmetal mines consumed 25 percent of all the industrial explosives used during 1954. Consumption by this portion of the mineral industry totaled 171,528,832 lb., of which 170,166,847 lb. were high explosives other than permissibles.

LET THE RECORDS SPEAK!

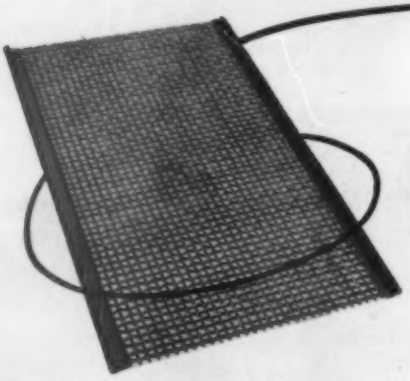
HANCO SCREEN HEATERS

ELIMINATE *Costly* SCREEN BLINDNESS



FASTER, MORE ACCURATE SIZING

HANCO electric heaters are engineered to meet top capacity requirements for heating **all** metallic screen cloth. Mechanical abuse such as "beating" or brushing can be **eliminated completely** when you install a HANCO electric heater. Treat your screens the modern way – get HANCO.



Available in five different assemblies. HANCO engineers have designed and constructed electrical screen heaters to fit YOUR make of screen. Note: Reduction in openings can be effected to meet ever changing specifications.

LOOK AT THESE FEATURES

Faster screening—faster processing means fewer "returns".

Elimination of mechanical abuse to keep screens open.

Longer screen life — no manual cleaning increases screen life up to 800%.

Fewer shut downs for replacement of worn screens.

HANCO quick change assemblies assure easy cloth changes.

Low maintenance cost. HANCO heaters are designed for heavy-duty service.

SEND FOR OUR COMPLETE BULLETIN

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F. R. HANNON & SONS

1605 Waynesburg Rd. S.E., Canton 7, Ohio

PIONEERS IN ELECTRIC SCREEN HEATING – FIRST IN THE FIELD OF LOW VOLTAGE AND HIGH AMPERAGE SCREEN HEATING

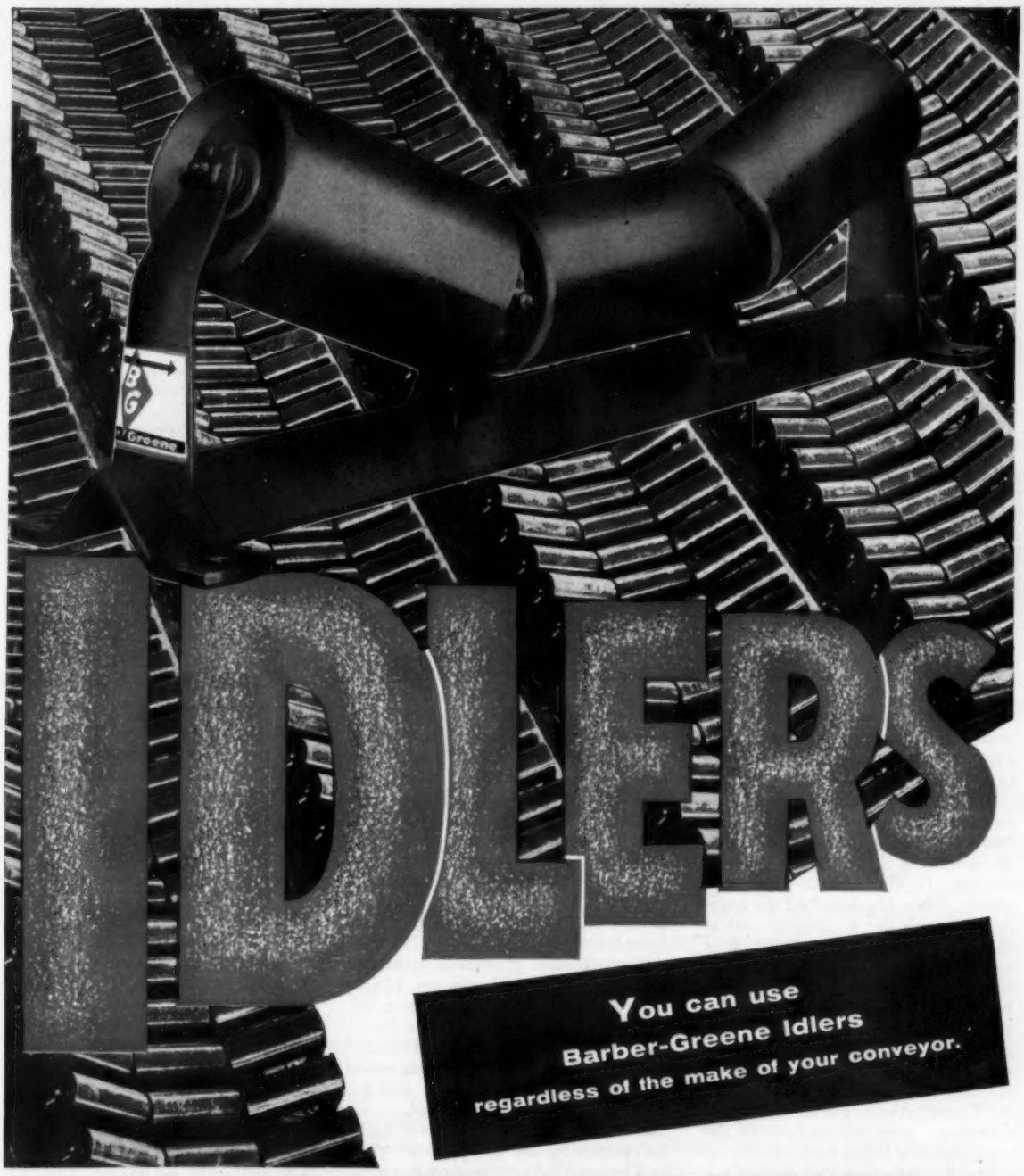
Mexico Refractories Co. Honors President Arthur

On September 17 J. B. Arthur, founder and president of the Mexico Refractories Company, Mexico, Mo., received a bronze plaque commemorative of his leadership in this fast-growing concern on the occasion of its 25th anniversary. The presentation was made by the 16 men who have been continuously associated with him since 1930.

J. B. Arthur

Other honors occasioned by the silver anniversary celebration included the presentation of a plaque to Mr. Arthur by the Mexico Chamber of Commerce. A testimonial dinner was given in his honor and an entire edition of the local newspaper was devoted to the company's growth. The September issue of the industry's monthly trade publication *Brick and Clay Record* also carried a feature story on Mexico Refractories and Mr. Arthur.

United States Gypsum Company recently reported earnings of $19,218,579 for the first six months of 1955 compared with $14,524,692 for the same period during 1954. Sales rose 20 percent to $121,925,516 from $101,459,539 a year ago.



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descriptive literature . . . sound movies
cost studies . . . nearby job inspection . . . plant layouts

Barber-Greene

AURORA, ILLINOIS, U.S.A.

CONVEYORS . . . . . LOADERS . . . . . DITCHERS . . . . . ASPHALT PAVING EQUIPMENT

BG

30 Years ago in Pit and Quarry

THE October 15, 1925, issue of PIT AND QUARRY was dedicated almost entirely to safety. In it were five special articles discussing various aspects of this subject. This issue also announced the completion of plans by the National Crushed Stone Association for the establishment of a Bureau of Engineering in Washington, D. C. The office of the secretary of the Association was also to be moved there from Columbus, Ohio. The director of the bureau, it was announced, was to be A. T. Goldbeck, then chief of the Division of Tests, the U. S. Bureau of Public Roads. The new secretary was J. R. Boyd, also a graduate engineer, who had worked with Mr. Goldbeck at the Bureau of Public Roads. Fourteen reasons were given for the establishment of the Bureau of Engineering; these are just as important now as they were then.

One of the six safety articles was entitled *How a U. S. Gypsum Lime Plant Operates With Few Lost Time Accidents,* by J. R. Davis, superintendent, U. S. Gypsum Company, Genoa, Ohio. He described the manner in which the accident record at this plant was greatly reduced by a comprehensive safety program. In *Safety in Quarry Operations,* T. P. Kearns, superintendent of the Industrial Commission of Ohio, gave excellent advice on safety from the viewpoint of the government. *Fatal Accidents in the Cement Industry* by R. Frame, Alpha Portland Cement Company, gave an analysis of the great progress being made in that industry toward safety and pointed out means by which further improvement could be achieved. L. M. McDonald, superintendent of Plant No. 8 of the Canada Cement Company, described the safety methods used at this plant. *Safety in the Use of High Explosives* by Lieut. Col. Geo. R. Spalding, U. S. Corps of Engineers, described army safety measures which could be readily applied to the commercial use of explosives. The title of the sixth safety article, *Hazards of Standard and Narrow Gauge Railroad Equipment in Quarries,* was self explanatory.

An interesting item was an announcement by the U. S. Treasury Department to the effect that cement from Russia would thereafter be admitted into the United States free of duty under a reciprocal agreement.

Plant operating articles in the October 1 and 15, 1925, issues included three on cement. One described the unusual quarrying operation of the Beaver Portland Cement Company, (now the Ideal Cement Company) 30 miles from the plant at Gold Hill, Oregon. A shovel loaded the stone into dump cars to the primary crusher, which was followed by a scalping screen, a secondary crusher and bins. Two 15-ton tram cars attached to cables and counterbalanced by two empty cars lowered the stone 1,400 ft. in a distance of 4,500 ft. The stone was then dumped into railroad cars and hauled three miles to a new railroad, which hauled the stone seven miles to Grants Pass. Here another railroad hauled it 20 miles to Gold Hill.

The Oregon Portland Cement Company, Oswego, Oregon, had just completed the conversion of its quarry to the glory-hole method, effecting considerable savings. There was also a complete description of the operations of the Olympic Portland Cement Company at Bellingham, Wash. This plant, which went into operation in 1915, was said to have been the first cement plant on the North American continent built to operate by the wet process.

The sand industry was represented by a description of the Vermont Marble Company's operation at Proctor, Vt. From 250 to 300 tons of sand were needed daily in cutting and grinding marble. A 2-mile aerial tramway was used to carry the sand to the plant.

The gypsum industry was represented by two articles. One described the new 2-kettle gypsum plaster plant of the Standard Gypsum Company at Seattle, Wash. The other described the gypsum quarrying operations being developed by a Mexican company on San Marcos Island in the Gulf of Lower California.

The lime industry was also featured with a complete description of the Jointa Lime Company's operations at Glens, Falls, N. Y. Dimension stone quarrying by the Vermont Marble Company near Proctor, Vt., was also described.

Crushed stone was represented by the Graham Brothers famous quarry on beautiful Catalina Island, which several PIT AND QUARRY editors have found it necessary to visit over the years. This was a hillside operation with the quarry floor 260 ft. above ocean level, where barges were loaded for shipment to the mainland.

The new feldspar mill of the Oxford Milling & Mining Company at West Paris, Maine, was also described.

Other articles included the following: *Earthquakes and Insurance* by Dwight Ingram; *How Peerless Portland Cement Company Reduced Material Handling Costs* by J. L. Langner; *Concerning the Hydraulic Elevator* by G. B. Massey; *Blasting and the Use of Explosives* by F. F. McLaughlin; and *Economies in Lime Manufacture* by F. A. Westbrook.

Housing Improvement Council Launches First Campaign

ACTION—The American Council To Improve Our Neighborhoods—recently started its kick-off campaign with the endorsement of President Eisenhower and with the sponsorship of a large segment of American industry.

Purpose of the campaign is to alert citizens to the evils of slums and housing decay, so that they will do something about this country's $250,000,000,000 investment.

Working through existing channels, ACTION makes no attempts to duplicate or replace other organizations.

Community pride and awareness of the stake each person has in his housing will be stimulated by the campaign. The Advertising Council, public service medium of the advertising industry, has accepted the ACTION program as one of its 1955 public interest campaigns, and its broad advertising allocations will be especially utilized this fall.

Booklets are planned which will stress action on this problem, and a Washington conference will be held to review the economic and social implications of the present housing situation and potential progress which can be made by 1965.

"Reduced Oil Consumption 85% with Cities Service C-300 Motor Oil!"

Here's the story in the words of David D. Vickrey, Superintendent of Chenoa Stone Company:

"About two years ago, we switched from another nationally prominent brand oil to Cities Service C-300 Series Motor Oil. The results have been amazing.

"C-300's detergent action completely eliminated a bothersome sludge problem. On our first three oil changes with it, we removed 5 gallons of sludge from each of our 200 horsepower diesels. Since then, these diesels have remained clean, and today, when we open the crankcase, we can even see the paint.

"We also are using far less oil between changes. In fact Cities Service C-300 actually cut make-up oil from 5 to 6 gallons every 150 hours to less than one gallon every 150 hours!

"In addition to C-300 oil, we use Cities Service Lubricants for every requirement... Diesel Fuel, Gasolenes, Trojan M Grease and hydraulic fluid. We have been completely satisfied with every product.

"Cities Service has given us top-notch service, the best we've ever had. We are better supplied than ever and have learned to rely on Cities Service dependability."

There is nothing Cities Service could possibly add to Mr. Vickrey's statement, except a reminder to contact your local Cities Service representative in order that you may enjoy similar results in *your* operation. Or write: Cities Service Oil Company, Sixty Wall Tower, New York 5, N. Y.

CITIES SERVICE

QUALITY PETROLEUM PRODUCTS

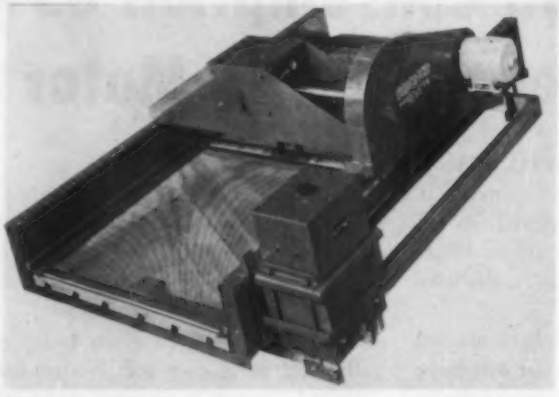
New Machinery and Equipment

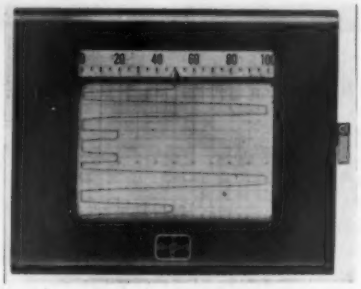
(For more information, use card on p. 99)

● A new multi-purpose Movall wagon for use with Caterpillar DW15 tractors is announced by the C & D Manufacturing Co. It has a heaped capacity of 16 cu. yd., and a carrying capacity of 44,000 lb. Under favorable job conditions, it can also be used with Cat DW10 tractors. Known as the RD15 Movall, the new "scraper-in-reverse" wagon has the many proven features of the larger 25-yd. Movall. These include the positive cable-controlled (out the rear) ejection which enables Movall wagons to handle any material that can be top-loaded. ↟ (51)

● Designed for use with single rear axle tractors, a new tandem axle trailer dump is announced by Galion Allsteel Body Co. Designated the model STM Transporter, it is especially built for use in localities where weight laws establish a medium gross weight limit and allow credit for only one set of tandem axles. Available body lengths range from 19 to 24 ft. with payload capacities of 10 to 36 cu. yd. Three optional Duoscopic center-mounted, twin telescopic hoists provide lifting capacities from 24 to 34 tons. ↟ (52)

● The Deister Concentrator Co. has released a new vibrating screen — the Leahy heavy-duty model E with FlexElex screen heater. It effectively prevents blinding because of differential motion, and use of FlexElex, which keeps the screen wires warm and dry for uninterrupted high production. An entirely new jacket assembly and mounting concept is employed in this unit. → (53)



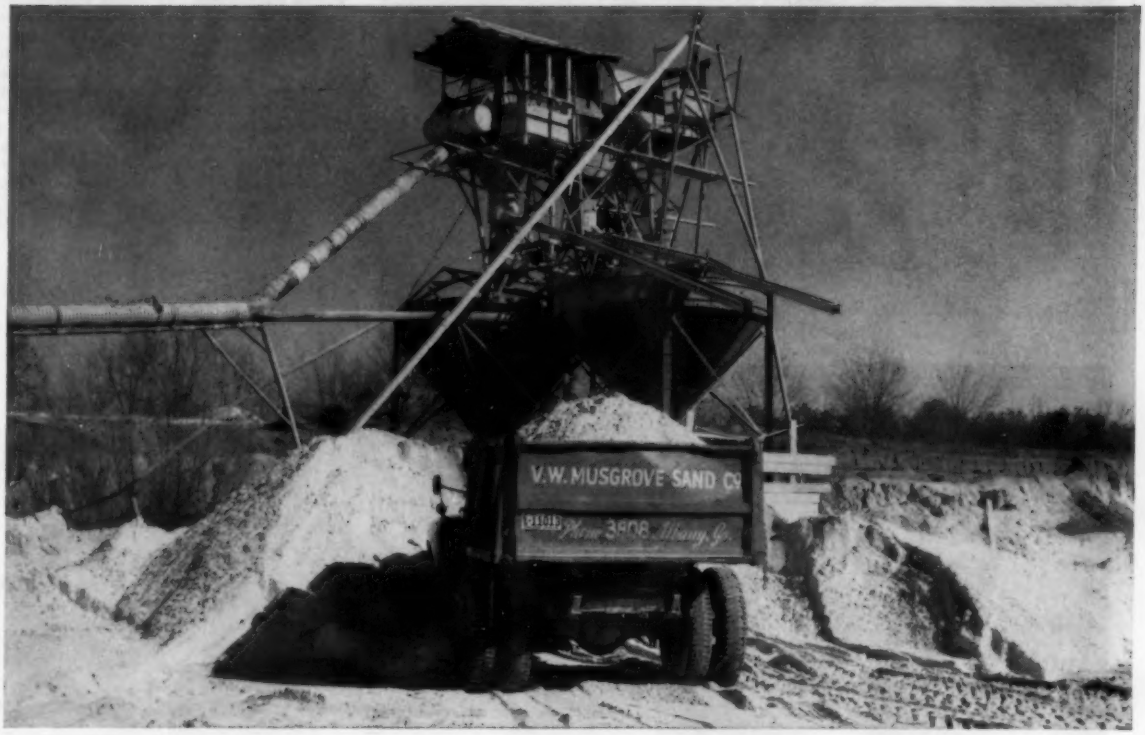


● A recording wide-strip potentiometer which features full-scale pen travel in only 0.4 seconds has just been announced by The Bristol Co. This high-speed electronic Dynamaster recorder has proved itself highly useful for recording rapidly changing variables because the pen makes the traverse across the 11-in. chart without over-shooting the end. Chart speeds up to 4 in. per second are offered. ↟ (54)

● A new way of bulk handling, bulk shipping, and storage of flowable solid materials is provided by synthetic rubber and fabric containers developed by the United States Rubber Co. The containers can be collapsed after emptying for return and re-use. Called Sealdbins, they are made in 70-, 300-, and 370-cu. ft. sizes. They may be leased at a monthly rate. ↟ (55)

● Steelox structures made by Armco Drainage & Metal Products, Inc., are used on many barges throughout the United States because they can be assembled in a matter of hours, and be easily attached to either steel or wood decks. Relatively light in weight, they provide maximum floor space and their design combines strength with flexibility to remain weathertight on an unstable foundation. ↟ (56)

B.F.Goodrich



Sand company gets 95,000 miles with recaps from all-nylon All-Purpose tires

MUSGROVE Sand Company trucks haul sand and gravel to construction sites within a 45 to 50-mile radius of Albany, Ga. Working as many as 75 hours a week, these trucks travel over all types of roads in all types of weather. B. F. Goodrich tires are used 100%—chosen, says owner V.W. Musgrove, because they cut costs.

B. F. Goodrich All-Purpose tires are built with an *all-nylon* cord body. Nylon is stronger than ordinary cord materials, withstands double the impact and resists heat blowouts and flex breaks. The *all-nylon* cord body outwears even the extra-deep All-Purpose tread—up to 67% deeper than that of a regulat tire—and can still be recapped over and over! Musgrove reports that with 2 recaps he gets 95,000 miles of service from *all-nylon* All-Purpose tires!

All-Purpose cleats are curved to grip better, on or off the road. "Buttons" on alternate cleats resist skidding. And as the center rib wears, it widens, putting more and more rubber on the ground, decreasing the rate of wear. All this, plus B. F. Goodrich compressed tread construction that resists abrasion and adds mileage, means that this sand company's tire dollars go farther.

See new *all-nylon* All-Purpose tires (rayon construction available at lower prices) at your B. F. Goodrich retailer's. His address is listed under Tires in the Yellow Pages of your phone book. Or write *The B.F.Goodrich Company, Tire & Equipment Division, Akron 18, Ohio.*

SUPER EXPRESS TIRES used on front wheels here will give about 150,000 miles of service with recaps, V. W. Musgrove reports.

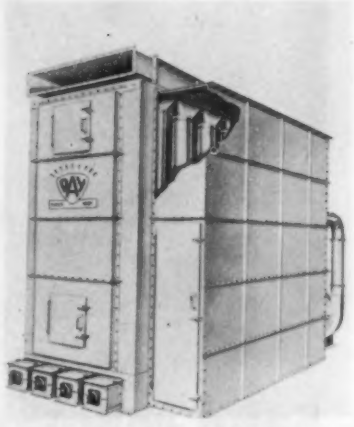
"ALL-NYLON All-Purpose tires have definitely shown that they give much better than average service." owner Musgrove writes.

Specify B. F. Goodrich tires when ordering new equipment.

RESEARCH KEEPS B.F.Goodrich FIRST IN RUBBER

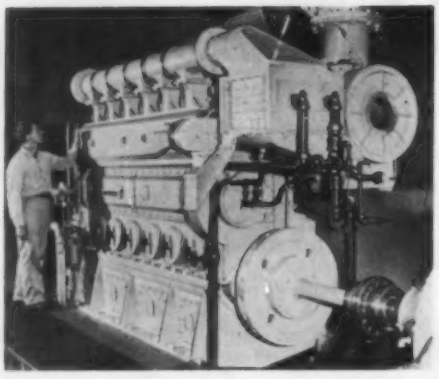
● The Davis model 102 loader manufactured by Mid-Western Industries, Inc., has been specifically designed and accepted as special duty equipment for the new International 300 utility tractor. The loader utilizes the tractor's hydraulc system. It features twin dump cylinders with down pressure, heavy-duty, box-frame construction throughout, and an 11 cu. ft. material bucket with high carbon steel cutting edge. All standard attachments for Davis loaders, including a utility bucket, dozer blade, crane, manure fork and push-off sweep-rake stacker are available. ← (57)

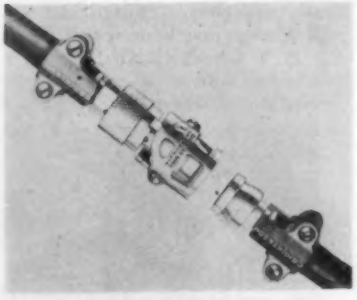
● Union Bag & Paper Corp. recently redesigned packages for the Huron Portland Cement Company's complete line of cement products. These new bags have a horizontal band with the brand name ("Huron") raised nearer the top of the package and with the product name ("Cement") and the product type designation ("Regular," etc.) brought together to read as a unit. Perhaps Union can help you with your bagging problems. ← (58)



● All housed reverse jet Hersey-type dust filters supplied by The Day Co. are now being furnished with a newly-designed housing. The new housing features a walk-in access door and two inspection doors. Small access doors are located at the top and bottom of the filter chamber which allow periodic lubrication and inspection of the gear-motor drive which operates the reverse jet air pressure blower and screw conveyor discharges. ↑ (60)

● In answer to the demand for heavy-duty continuous service engines in the smaller sizes, the Worthington Corp. has developed the new W9 engine with Jet Swirl power. The W9 has a 9-in. bore, 11-in. stroke, and is a 4 cycle 400-1,400 hp. engine for use at speeds up to 1,000 rpm. As an oil or gas diesel, dual-fuel diesel, a spark ignition gas engine, or tri-fuel engine, the W9 can use residual, crude, and distillate oils, natural gas, sewerage gas, manufactured gas or propane, as fuels. → (59)





● C. B. Hunt & Son, Inc., has announced production on a new, locking, safety type, quickly detachable valve coupling which permits the operator to shut off air and change tools quickly and safely. These couplings are now available in ¼-, ⅜-, ½-, and ¾-in. sizes for line air up to 250 psi. ↑ (62)

● A new hydraulically-operated dump motor wagon, the TW-360, is released by Allis-Chalmers. This new 47,000 lb. unit is powered by the firm's 280-hp. diesel engine with speeds up to 20 mph in 4th gear. ← (61)

NEW UTILITY CRANE

the self-propelled, 15-ton capacity UC-68

Here's the only utility crane that offers you true power hydraulic control!

THE new one-man operated Link-Belt Speeder UC-68 features Speed-o-Matic — fingertip power hydraulic control. It's the system that's designed to provide easy, fast, smooth response . . . ideal control for speed with accuracy. It's engineered to reduce operator fatigue—enable him to maintain greater output with less effort.

What's more, this new machine features extra strength in the upper machinery, extra ruggedness in the lower . . . over-all greater "live" weight and more "net" hp.

Fully convertible to any front-end attachment, it's ideal for both work-and-run assignments or high-speed production jobs. For details, contact your distributor, or write for Catalog 2566. 13,926

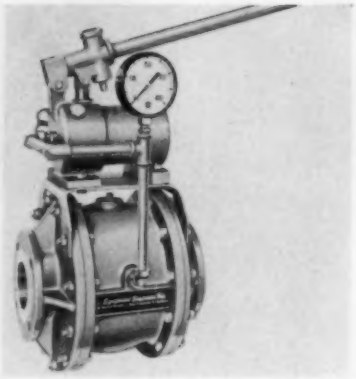
Check these advantages!

- All-welded, stress-relieved upper frame
- Extensive use of anti-friction bearings
- Power unit with torque converter
- Interchangeable, self-compensating Speed-o-Matic clutches
- Independent rapid boomhoist with raising and lowering clutches
- Power hydraulic steer and hydraulically operated stabilizers
- Easily removable front and rear outriggers, optional extra

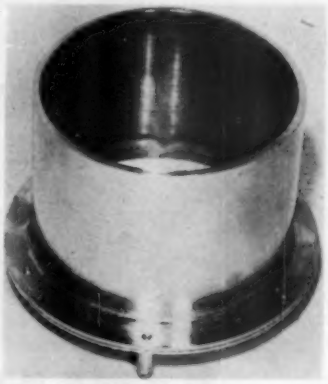
LINK-BELT SPEEDER

Link-Belt Speeder Corporation • Cedar Rapids, Iowa

● The Kenworth 803, a new 40-ton spring-mounted dump truck, was recently released by the Kenworth Motor Truck Corp. Body capacity struck is 24 cu. yd., and heaped (2 to 1) it is 28 cu. yd. With a gross vehicle weight of 150,000 lb., the vehicle measures 12 ft. across the front hubs and is 14 ft. off the ground over the one-man cab shield. The truck is powered by a single diesel engine varying between 300 and 500 hp. depending on the grades encountered. Turning radius is 36½ ft., at an angle of 30 deg. ← (63)



● Better control for abrasive flows is claimed for the rubber slurry valves made by Equipment Engineers Inc. The Krebs valves are encased and rupture-proof, have maximum abrasion resistance, center orifice flow, and simple remote finger-tip control. ↑ (64)



● Custom Scientific Instruments, Inc., now offers long-life sieves as a means of reducing costs of routine quality control testing. These sieves developed by Federal Portland Cement Co. are designed to allow the operator to replace the screen upon failure. ↑ (65)

● Operating on a current of less than 1 microampere, this new temperature-indicating, electronic, contact-controller made by Automation Instrument Corp. holds process temperatures as high as 2500 deg. to within plus or minus 1% of scale. ↑ (66)

This informative 8-page catalog gives you all the facts, saves you time and money in getting Woven Wire Screens for *immediate delivery!*

Here's a catalog that tells you quickly all you'll need to know in ordering woven wire screens. Tough industrial Simplicity Screen Cloth in a wide choice of gauges and openings is available from stocks at Durand, Michigan. This catalog lists all the sizes in simple, quick-reading chart form for your convenience. A minute's glance will give you all the ordering information you desire, such as width of opening, diameter of wire, decimal opening, and % area open, together with the sheet sizes in stock. A really concise and useful catalog! Send coupon below now for your free copy.

Simplicity
TRADE MARK REGISTERED
ENGINEERING COMPANY • DURAND 12, MICHIGAN

163

Sales Representatives in all parts of the U.S.A.

FOR CANADA: SIMPLICITY MATERIALS HANDLING LIMITED, GUELPH, ONTARIO

Please send me the catalog of your stocks of high-grade Simplicity Woven Wire Screens. ☐

MY NAME _____ TITLE _____

FIRM NAME _____

ADDRESS _____

CITY _____ STATE _____

Please send your catalog No. 53, Screens, Feeders and Conveyors, also. ☐

Thermoid Hose designed specifically for use in quarries

Thermoid designs and manufactures many types of hose built to give longer service and lower operating costs in a wide variety of specific applications. Here are three that are ideal for rugged quarrying and construction work:

THERMOFLEX—Mandrel-built air hose for extreme service and direct connection to compressors. Smooth, black abrasion-resistant cover.

VERSICON—Most versatile hose ever developed. Handles air, water, oil, gasoline, dilute acids and gases. Ideal for use with air-operated tools.

#325 CL SUCTION HOSE—Heavy duty wrapped hose reinforced with rugged wire enclosed in a woven cord carcass. Long wearing tube and cover resists weather and abrasion. Can be restored to shape after crushing.

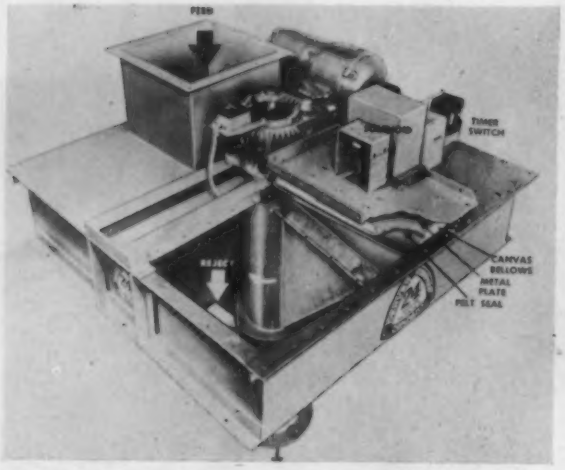
Thermoid research is responsible for new, better hose construction which makes Thermoid Hose more durable . . . easier to handle. Quarrying and construction work also demands the best in Conveyor Belting and Multi-V Belts. Ask your Thermoid Distributor for complete information on all these Thermoid Products. Or if you prefer, write direct.

Conveyor & Elevator Belting • Transmission Belting
F.H.P. & Multiple V-Belts • Wrapped & Molded Hose

Thermoid

Rubber Sheet Packings • Molded Products
Industrial Brake Linings and Friction Materials

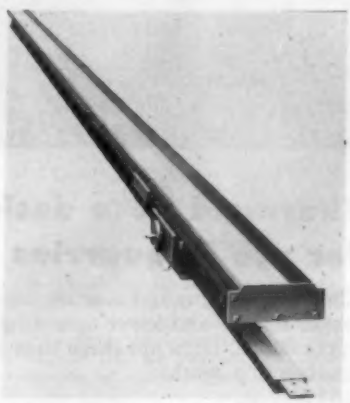
Thermoid Company • Offices & Factories: Trenton, N. J., Nephi, Utah



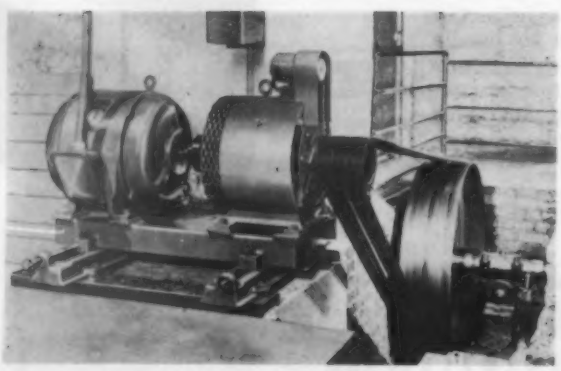
● Dust problems in many dry sampling operations will be solved by the application of the new Denver automatic (Vezin-type) dry sampler just released. All material in the system passes through enclosed ducts. They are available in the following sizes: 20, 24, 28, 36, 40 (illustrated), 48, and 60 in. A unique feature is the solenoid-controlled cover over the cutter opening which prevents continuous sampling. ▲ (67)

● Handling the new TerraTrac model "600" made by American Tractor Corp., is a snap because the all-hydraulic constant-mesh Terramatic transmission provides automatic power shifting in any speed or direction. With 4 speeds forward up to 5.63 mph, and 4 speeds reverse up to 6.2 mph, plus an infinite number of in-between speeds with the torque converter, the unit provides an attractive answer to the problem of which 1 cu. yd. loader to buy. ▲ (68)

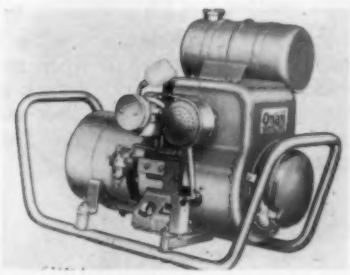
● Special features have been incorporated by the Blaw-Knox Co. into this 5 cu. yd. bucket to meet specific requirements at a cement plant. The 14,250 lb. bucket minimizes the "dribbling" of cement which is difficult to control with fine granular powders. Due to this dusting condition, special alloy steel pins and manganese steel bushings have been used, rather than ordinary bearings, in most moving parts. The lone exception is in the lever arm sheaves which are mounted on sealed anti-friction bearings. This particular installation has given excellent performance on an overhead traveling crane at the Universal, Pa., plant of the Universal Atlas Cement Company. The bucket also is equipped with an unusual main hinge design which insures rigid scoop alignment. ➔ (69)



● A lightweight mechanical vibrating conveyor has been added to the line of conveyors made by The Jeffrey Mfg. Co. The new model LMV is built in 12 ft. section available in deck widths of 5-, 8-, 12-, 18-, and 24-in. ▲ (70)



● The "Ampli-Speed", a precise adjustable speed drive, made by Electric Machinery Mfg. Co., provides a speed control of plus or minus 2%. The system consists of the drive, a magnetic amplifier speed control, and a control rheostat. ➔ (71)



● Lightweight and ruggedly built, a new 1500-watt, 60-cycle, a.-c. electric plant made by D. W. Onan & Sons Inc., is offered either on a carrying frame or designed for stationary service. A 2-wheel dolly is optional. ▲ (72)

"Here's the plant that hits specifications easier and closer than any other plant we've ever operated . . ."

says **STREET BOYD**
of **STEINBERG-BOYD CONSTRUCTION CO.**
TULSA, OKLAHOMA

PAVING STONE	
OKLAHOMA SPECIFICATIONS	CEDARAPIDS PRODUCTION % PASSING
100% passing 3"	100%
95-100% passing 2"	97.7%
70-95% passing 1½"	85.1%
50-85% passing 1"	61.7%
----- passing ¾"	34.6%
15-40% passing ½"	19%
----- passing ⅜"	10.6%
0-2% passing No. 4	1.9%

CLASS A	
OKLAHOMA SPECIFICATIONS	CEDARAPIDS PRODUCTION % PASSING
100% passing 1½"	100%
90-100% passing 1"	95.9%
----- passing ¾"	70.7%
25-60% passing ½"	29.7%
----- passing ⅜"	12.4%
0-5% passing No. 4	1.4%

". . . and we're getting 180 to 250 TPH in Paving Stone, 140 to 160 TPH in Class A from our new Cedarapids Portable Crushing Plant."

You can hit specs right on the nose, too . . . outproduce any comparable plant . . . and do it at the low production costs that step up your profit. That's some of the reasons Steinberg-Boyd is so well satisfied with their new Cedarapids Unitized Portable Crushing Plant. It consists of a 2540 Portable Primary, an 1836 Twin Jaw Scalping Unit and the brand new Cedarapids Model 30C Secondary Plant featuring the Symons Cone Crusher. It's a plant designed to meet the big output and exacting gradation demands of modern turnpikes and toll roads.

Best of all, this set-up has all the features that *make money for you* on every job.

THESE EXCLUSIVE CEDARAPIDS FEATURES ASSURE BETTER GRADATION BIGGER PRODUCTION LOWER OPERATING COSTS

1. VIBRATING GRIZZLY
. . . by-passes most of the undersized material and fines. Increases primary output up to 25%.

2. TWIN JAW CRUSHER
. . . increases primary crushing production up to 40% over single jaw units and is especially efficient in abrasive rock or gravel.

3. HORIZONTAL VIBRATING SCREEN
. . . steps up screening capacity because the horizontal position of the screen cloth gives 12½% more screening area than an inclined screen of the same length.

4. SYMONS® CONE CRUSHER
. . . produces high tonnages of uniform, fine-crushed aggregate, even in the hardest or most abrasive rock or gravel. The Symons Cone Crusher, built by Nordberg, and world famous for big-volume, low-cost operation, has been combined with Cedarapids mobility and quality construction to give you a portable plant with the high-profit features of a permanent installation.

Cedarapids Built by IOWA

IOWA MANUFACTURING COMPANY

Cedar Rapids, Iowa, U. S. A.

Rock drilling is a one-man operation with the Schramm Truck Mounted Rotadrill. To put the Rotadrill to work, operator needs only lower outriggers, raise mast and attach drill pipe and bit.

Oversize truck engine (450 cu. in.) drives 4½" x 4¾" x 6 cylinder Schramm Compressor through power take-off. Compressor delivers 320 c.f.m. at 40 p.s.i., can be instantly increased to 200 p.s.i. for dewatering and breaking out blockages.

Heavy welded structural steel mast, raised and lowered hydraulically, is carried on crotch between jobs.

Drilling controls are located adjacent to mast for one man operation. Individual valves control each outrigger, rotation of motor, fast and slow vertical feed and breakout cylinder.

IN QUARRY AFTER QUARRY:

Rotary air drilling proves fastest of all

It's an established fact that quarrymen drill rock faster and easier when the new Schramm Truck Mounted Rotadrill is on the job. Actual field reports prove that Schramm units using compressed air set new records in almost every case—making hole 600% to 700% faster than conventional drilling techniques.

Mobility of the drilling unit is a further advantage to quarrymen. Fast set-up is another. And prolonged bit life is a third. These are added reasons why, in quarry after quarry, Schramm Truck Mounted Rotadrills are replacing conventional wagon drills.

Rotary air drilling is accomplished through a reversible hydraulic motor-driven rotation head, mounted on a carriage that rides tracks mounted on the mast. Hydraulic drive provides rapid travel and slow speed, with maximum down-pressure or lifting ability of 20,000 pounds. A Schramm air compressor, driven from the truck engine through a power take-off, delivers 320 c.f.m. of air at 40 p.s.i.

Complete details of the SCHRAMM TRUCK MOUNTED ROTADRILL are described in Bulletin TMR-55. It's yours for the asking. If you are not familiar with the rotary air drilling technique, ask for our bulletin, "Rotary Rock Drilling with Schramm Air Compressors." Although prepared for the petroleum field, this booklet is packed with information of interest to anyone who owns a drill rig.

Your local Schramm Dealer is listed in the Yellow Pages of your telephone directory.

Schramm, Inc.

MANUFACTURERS OF AIR COMPRESSORS

640 North Garfield Avenue
West Chester, Pa.

Announcing

New Ford Trucks for '56

New capacities carry more load; new power moves it faster

Now! Most horsepower per dollar!

NEW POWER! More horsepower for your money than any other truck line—proved by comparisons of horsepower and suggested list prices of *all* trucks!

NEW CARRYING CAPACITY! New bigger payloads. New higher-capacity tubeless tires on *every* model.

NEW COMFORT AND SAFETY! New *Driverized* Cabs! New, exclusive *Lifeguard* Design safety features.

NEW STYLING! New "leadership look" from Pickups to 65,000-lb. GCW tandem-axle Big Jobs!

Ford's big advancements for '56 can make more money for you than ever. Choice of eight new engines with *Short Stroke design* (reduces piston travel, cuts friction) and up to 26% more power. New *Driverized* Cabs with full-wrap windshields to cut driving strain.

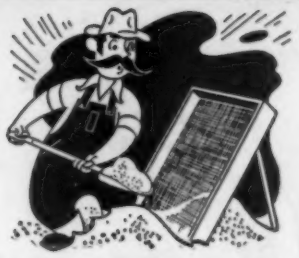
New *exclusive* Lifeguard steering wheel and Lifeguard door latches give added protection in case of accident. New styling builds prestige for your business. *Now on display at your Ford Dealer's.*

New Features for Sand and Gravel Trucks

• Here's a new *Money Maker*—the '56 Ford F-800 BIG JOB, shown above. Your choice of two mighty, Short Stroke engines: new 190-h.p. *Torque King* Y-8 . . . or new 200-h.p. *Torque King* Special Y-8 with performance-boosting hood air scoop, 4-barrel carburetion and dual exhausts for even greater time savings!

Both engines have such extra-long-life features as sodium-cooled exhaust valves *standard*. Also standard: new higher-capacity *tubeless* tires, tachometer, new 12-volt electrical system. Power Steering and *electric-shift* 2-speed axle available. New 24,000-lb. GVW; 48,000-lbs. GCW.

Screenings



by Ray L. Smith, Jr.

YOU sit in your car at the busy intersection, waiting for the traffic light to change. The time you wait always seems longer than it is—then comes the green. Spurred by a couple of impatient horn-toots behind you, you give the old car the gun and . . . it STOPS.

The harder you try to get the engine turning again, the less luck you seem to have The noise behind you increases. The traffic officer glares, and you don't like the way his neck turns red. You are in a panic of mental sweat. And the engine seems to say, "You had your chance to get me started right, and you failed—now take the consequences."

Are we talking about automobiles? Yes, in a way But it's only a figure of speech. Business letters, too, are often killed on the take-off, and once that happens you also "take the consequences"—lost reader interest, and lost possibility of a reply.

The LACK of a first paragraph which gets the letter in motion smoothly and makes the reader want to ride farther with you, is definitely a reason why some letters fail. To sum it up, unless you START RIGHT, you have little chance to END RIGHT.

That Coffee Break Again

THE "Coffee break" pays, according to a survey made in 1,160 industrial plants by Fact Finders Associates, Inc., of the employers, 75% reported improved morale; 62% a rise in productivity; 82% reduction in worker fatigue, and 32% reported a decline in accidents.

Rocks in Her Head

AN 18-year-old girl who literally had rocks in her head since childhood said she is feeling much better after a surprised doctor removed five pebbles from her nose cavity. Mildred remembers stuffing a handful of pebbles up her nose when she was three.

"It's wonderful," she said, after the minor operation. "This is the first time I've breathed out of that side of my nose."

Courtship Note

IF A JOB interferes with courtship a young woman has a perfect right to quit, the Oregon State Unemployment Compensation Commission has ruled. The Commission's annual report tells of a young woman who quit her job because irregular hours gave little time to see her fiance. She applied for unemployment compensation benefits and the sympathetic Oregon Board of Review ruled that she should have it under such circumstances.

Sandwoman

THE industry's most interesting sandman is a woman. She sends sand to Saudi Arabia, to Liberia, and to Algiers and gets good prices for it, though those places have no sand shortage.

The lady's special sand turns up on battleships and aircraft carriers to buttress gun emplacements. It is placed in sand traps on the best golf courses and is standard in the cigarette urns you see in theatre lobbies and such places. It was considered the very best mortar mix for use in constructing the United Nations building.

The sandwoman's product is sold all over the world for water-filtering systems, for replenishing private beaches, for weighting tumble-toys, for gravelling penthouse garden paths, in dental laboratories, in polishing marble, etching fine glass and finishing steel.

The sandwoman is Mrs. William A. Hannig, a grayhaired, soft-featured lady who wears rimless spectacles. She is a grandmother six times over. She has been in sand for twenty-five years.

And she stands in her own sand when she's at her penthouse parapet. That seems consistent in a sandwoman.

Lass: "Would you like to see where I was operated on for appendicitis?"

Lad: "Heck, no. I hate hospitals. Let's go to a movie."

Potpourri and Succotash

"Good morning," said a stranger to a woman who had answered the door bell. "Would you like to buy some insect powder?"

"No," she snapped. "I have no use for that stuff."

"Good," replied the stranger. "Then I'll take that room you are advertising."

The absolute end of old maid jokes is marked by the following: Two spinsters sat on a porch knitting when a hen came tearing around the corner, with a rooster not too far behind. Around and around they whirled. Finally, the hen, still doing well over the speed limit, ran into the path of a passing car. Observed one of the female spectators, "See, she'd rather die!"

Judge, after charging the jury: "Is there any question you would like to ask before considering the evidence?"

Juror: "A couple of us would like to know if the defendant boiled the malt one or two hours and how did he keep the yeast out?"

A little boy, caught in mischief by his mother, was asked, "How do you expect to get into Heaven?"

The lad thought a minute then said, "Well, Ill just run in and out and in and out, and keep slamming the door until St. Peter says, 'For heaven's sake, Bobby, come in or stay out.' "

Wise guys who ask a certain pretty waitress for her telephone number never get turned down. She whispers a certain number enticingly. When they dial it, a voice answers pleasantly: "Pest Control Service!"

"My husband would never chase after another woman. He's too fine, too decent, too old."

Said a feminine voice from a parked car: "What's that you've been drinking, rubbing alcohol?"

Eagle

WASHING-CLASSIFYING PLANT GIVES MAHOMET SAND & GRAVEL CO., MAHOMET, ILLINOIS *"A competitive advantage"*

MAHOMET Sand & Gravel Co., near the bustling university and industrial centers of Champaign-Urbana, Ill., has a distinct "competitive advantage" in marketing their concrete aggregate, because it is thoroughly washed and graded to meet specifications.

No combination of modern equipment can wash and classify material as economically and thoroughly as an Eagle plant section designed for your individual job—the result of years of experience in the field.

Mahomet's plant, near Chanute Air Base at Rantoul, Ill., a pumping operation, using deep Artesian well water for washing, consists of an Eagle 32′ single water scalping-classifying tank with 2-cell collecting-blending flume below the bleeder-valves on the tank. This flume discharges into the feed box or an Eagle 36″ x 25′ double screw fine material washer-classifier-dehydrator.

Note how U-shaped long weir gives three-side overflow thus reducing velocity and increasing retention of fines. Eagles have profit-making features from end to end. Read about them—ask for Catalog 55.

EAGLE RIBBON TYPE SCREW FOR THE BIG WASHING JOBS!

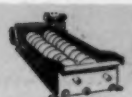
Eagle Ribbon type screws on the big washer at Mahomet have continuous one-piece flight welded to shaft. Wear resistant Ni-Hard alloy iron shoes protect working face and edge of flight—a sensible design which assures maximum service life and utmost performance.

EXPERIENCE, PROGRESS, SERVICE, SINCE 1872

EAGLE IRON WORKS

133 HOLCOMB AVE., DES MOINES, IOWA

FINE MATERIAL WASHERS



COARSE MATERIAL WASHERS

LOG WASHERS

"SWINTEK" DREDGE LADDERS

COMPLETE DREDGES

BREAKER BALLS

PILE HAMMERS

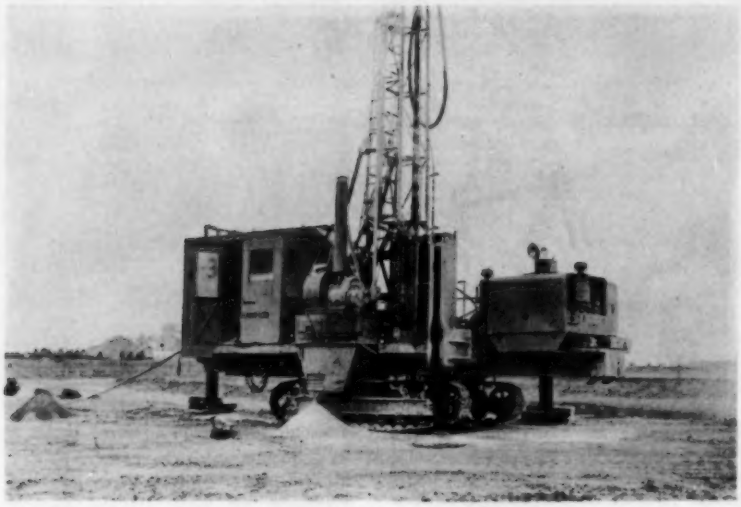
Presque Isle Corporation's

New $15,000,000 Michigan plant now producing 5,000,000 tons of fluxstone annually

By ROY L. PECK

features include primary crusher below grade with surge bin below for effecting a balance of operations—unique stacker-tunnel system—accurate blending control—high ratio of production per employee

General view of Presque Isle Corporation's quarry and fluxstone preparation facilities, Presque Isle, Alpena, Mich., which is producing 5,000,000 tons annually for the steel company owners.



One of the five drill rigs which is being used to put down 6¼-in. holes, averaging 40 ft. deep. On typical shots, 13 holes are shot in a single row at 24-ft. centers, with a burden of approximately 20 ft.

Excavation for the primary crusher was drilled and blasted out of solid rock 100 ft. below lake level.

another ON THE SPOT report

IN December, 1954, when the Presque Isle Corporation took over the property at Presque Isle, Mich., formerly owned by the Kelley Island Company, it launched a new 5,000,000-ton fluxstone plant. The $15,000,000 modern new plant is now producing five gradations of high-calcium limestone for open-hearth and blast-furnace fluxstone for the five steel companies on the Great Lakes which own the new corporation. Chemstone Corporation, a newly-formed subsidiary of the Minerals and Chemicals Corporation of America, will act as agent for the new company.

The fruition of this huge project and the selling of the basic idea of its economy to the steel company owners was a long-existent dream of Ralph L. Dickey, the new president of Chemstone Corporation, who for many years held a like position with the Kelley Island Company and its predecessor, the Kelley Island Lime & Transport Company. Following the decision to proceed with the construction of the plant, which has a production second only to that of the Rogers City, Mich., operation of the Michigan Limestone Division of the United States Steel Corporation, the succeeding phases of the construction were capably handled by John V. Andrews, vice-president, and William A. Roberson, chief engineer of the corporation. The preliminary and construction engineering designs of the entire operation is the work of John F. Meissner Engineers, Inc., Chicago, consulting engineers. The design of the office building, sanitary facilities, and all electrical work was also handled by this firm. Construction was done by Hunkin-McDowell Company, Cleveland, Ohio, contractors. The McDowell Company separately had the full responsibility for the design of the entire offshore plant—the traveling ship loader and other facilities on the dock, the blending and stocking system, and the dock itself. The company also designed the superstructure of the truck-maintenance building.

The new leasehold covers some 4,500 acres, a small part of this area having been quarried for many years by the Kelley Island Company and its predecessor. At that time the topmost stone was taken out of the site seven miles *via* rail to the plant, with maximum production not exceeding 8,500 tons per day, and shipment was by boat.*

Shipment is now being made *via* boat to Bethlehem Steel Company, Lackawanna, N. Y.: Great Lakes Steel Corporation, Detroit, Mich.; Republic Steel Corporation, Cleveland, Buffalo, and Chicago; Jones & Laughlin Steel Corporation, Cleveland; and Youngstown Sheet & Tube Company, South Chicago, Ill., and Indiana Harbor, Ind. These companies own the Presque Isle Corporation. Fine stone is also shipped to cement plants, etc.

The formation of the deposit, which is of fairly level configuration, consists of about 50 to 55 ft. of Rogers City high calcium limestone having an overburden of from 8 to 12 ft. of clay, sand, gravel, and earth. The lowest 10 to 12 ft. of this stratum consists of high-magnesium stone averaging 8.0 percent MgO. Below this formation is approximately 100 ft. of Dundee dolomitic limestone.

Gradation demands include the following sizes of high-calcium limestone for the end uses indicated: 10½-in. x 5½-in., open hearth; 5½-in. x 3½-in. and 3½-in. x 1½-in., blast furnace flux; 1½-in. x ¾-in., rotary kiln stone and aggregate; ¾-in. x 0, cement stone, fill. Provision has been made for producing ¾-in. x ¼-in. for aggregate stone, and ¼-in. x 0 for agricultural stone.

The plant location is to the north of the old quarry, which is situated about 20 miles northeast of Alpena, Mich. The edge of the quarry is some 2,500 ft. southwest of the Lake Huron shore line at this point. It was found from under-water investigation that the harbor could be improved by locating the dock 900 ft. out from the shore line in approximately 30-ft. deep water and keeping the dock relation parallel to the rock contour. This location was also chosen in order to keep the reclaiming tunnel elevations above water level, and to locate these tunnels on rock. The latter precaution was considered necessary in view of the heavy loadings imposed by the 90-ft.-high stockpiles above them.

Dock location was discussed with a group of the Lake Carriers and Lake Captains Association members before a definite decision was made. The location selected was thought to be most suitable for docking ships

*This plant was described in PIT AND QUARRY, March, 1936 issue.

Stripping of 10-ft. overburden is being done with crane and dragline bucket units.

General view of the quarry with one of the three electric shovels with 8- cu. yd. bucket on 45-ft. boom, loading one of the 27-ton rear-dump trucks.

during the prevailing winds of the shipping season. The location eliminated under-water drilling or blasting of rock to provide suitable ship channel clearance.

Drilling and Blasting

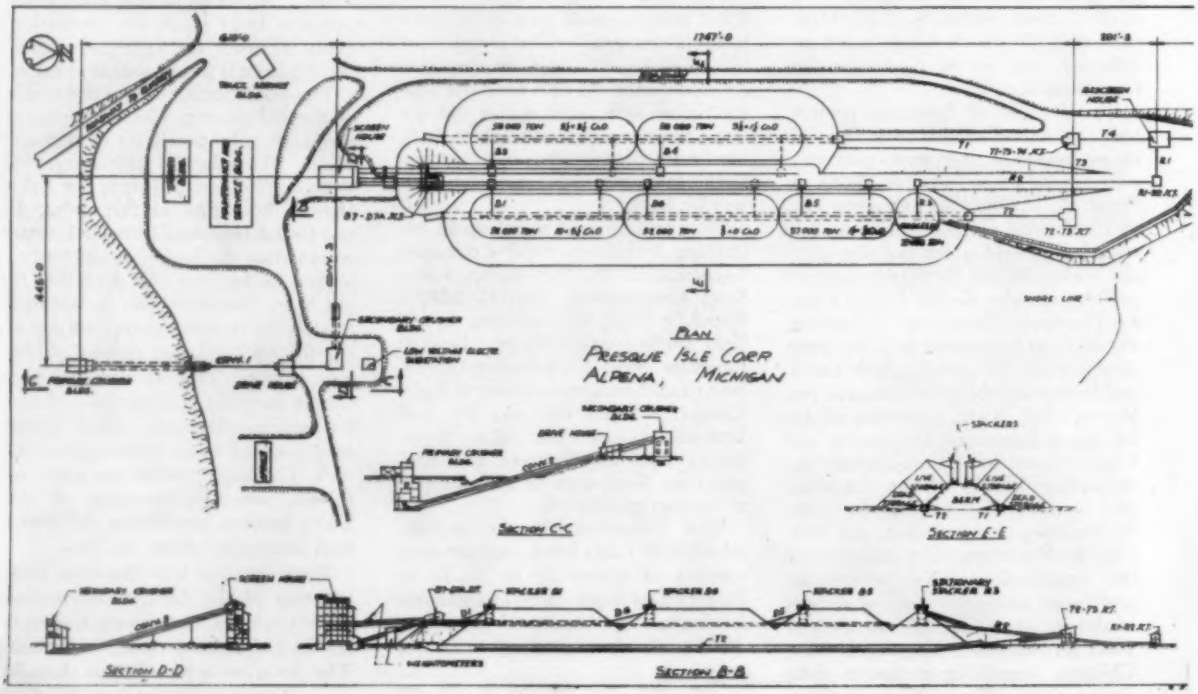
The limestone in the quarry is worked in varying faces according to the depth of the deposit at any given point. The blasting pattern likewise will vary with the formation encountered. Drilling is done by five Joy 58B drill rigs using 6¼-in.-diameter holes with depths varying from 39 to 42 ft.

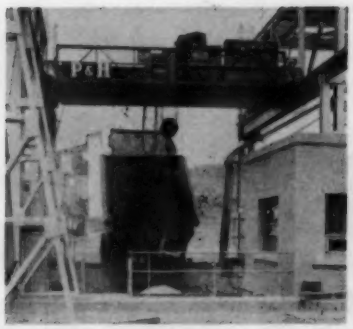
On one typical shot which was witnessed, 13 holes were shot in a single row at 24-ft. centers, with a burden of about 20 ft. These holes were drilled to a depth of 41 ft. Loading consisted of two 31-lb. cartridges of DuPont Nitramon A, six 20-lb. cartridges of Nitramite, and a primer cartridge, in that order, in each hole. Stemming with rock drillings of 22 ft. and the use of Primacord completed the preparation of the hole. Most of the shooting produced a yield of 4.75 tons of rock per lb. of explosives. Good fragmentation resulted, with a minimum of secondary shooting.

Loading of stone is done with three Bucyrus-Erie 190B shovels using electric power at 4,160 volts. These shovels have 8-cu. yd. buckets on 45-ft. booms. A Manitowoc No. 3900 crane with a dragline bucket is used for stripping. Additional equipment is planned for stripping, when some of this work (now being partly sub-contracted) will be done by the corporation.

Nine Euclid 36TD, 27-ton capacity diesel-powered rear-dump trucks and four Euclid 36TD tractors with Easton 35-ton side-dump trailers, are used to take the stone from the shovels to the primary crusher. Haul

Below is a general arrangement of the plant. A flow diagram is at the far right.





Left: One of the 27-ton rear-dump units unloads into the primary crusher. A 20-ton overhead crane is installed over the crusher. An operator in the control room at right has a full view of a dumping area.
Right: Loading holes at 24-ft. centers with 20-ft. average burden,, produced a yield of 4.75 tons per lb. of explosive.

distance now averages about 2,500 ft., but it will increase as the working of the quarry progresses to the northwest.

Primary Crushing

The primary crushing station is located near the north edge of the existing quarry, and the dumping point to the crusher has been established at the approximate elevation of the dolomite layer in that section of the quarry. This location eliminates up-grade hauling and thereby effects a considerable saving in diesel fuel and truck maintenance, improves the time cycles of the haulage units, and results in lower haul costs. The plant is designed to produce 2,000 t.p.h. of graded materials and to deliver these products into stockpiles ready for ship loading.

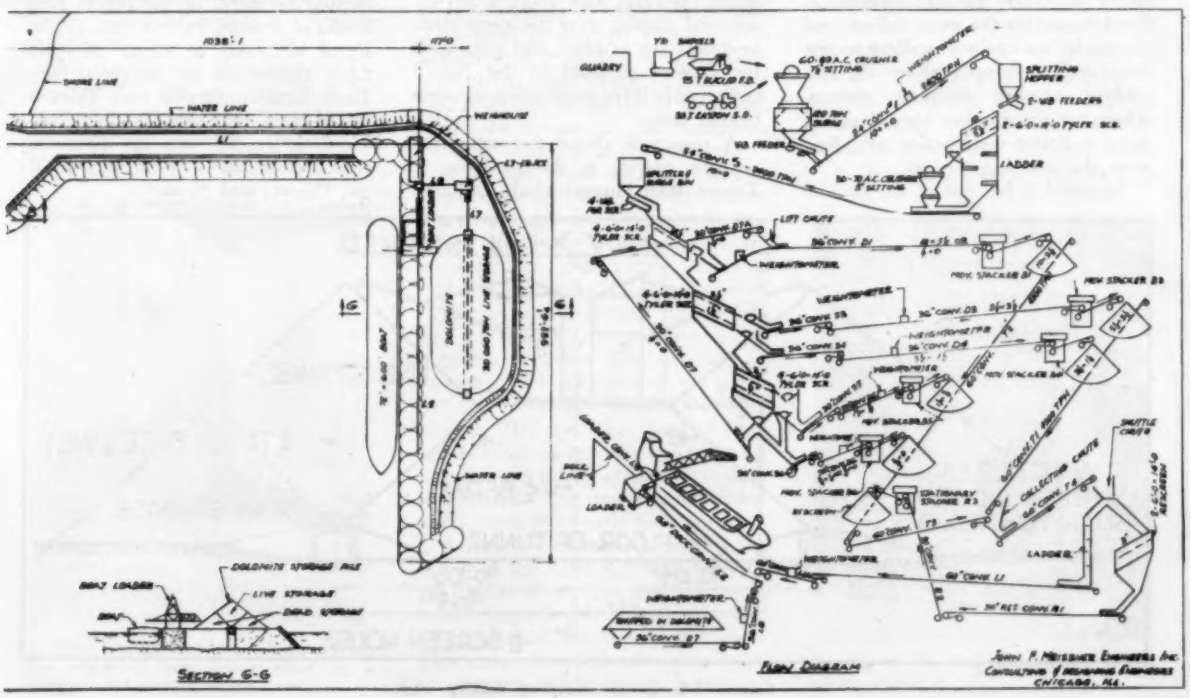
There is no housing above the primary crusher unit, which is an Allis-Chalmers 60-89 gyratory type having a ¾-in. eccentric or 1½-in. throw and with 8½ in. o.s. setting; it is powered by a Westinghouse 350-hp. motor. This unit is designed to receive stone from all types of haulage units in common use, such as end-dump trucks, side-dump trailer bodies, etc. Three sides of the stone box are open to dumping. A 20-ton capacity P & H overhead crane is installed over the crusher. It is equipped with a standard Easton dumping rig for unloading the side-dump trailer units. A Viking Lube-Oil circulating pump, type ZDH, is installed in the crusher.

One of the features of the crushing operation is the 200-ton surge bin provided below the crusher to take up momentary build-up of material passing through and to effect a balance between quarry, crushing, and screening operations. Crushed material is fed from this bin to the No. 1, 54-in. by 600-ft. belt conveyor by means of a Syntron Twin-Dual F-86-DT vibrating feeder, which protects the belt by passing fine materials through grizzly bars ahead of larger materials delivered off the end of the bars.

Hatches are provided in the foundation concrete to facilitate the removal of eccentric, motors, and various other mechanical equipment from the lower floors. An air filter unit provides clean air to the electrical control area. Water is used for cooling the crusher lubricating oil. The crusher operator is located in a heated control room above the stone box, where there is a full view of the dumping area. The large scale of the primary crusher installation is understood better when it is noted that the solid rock excavation for this crusher was nearly 80 ft. in depth.

Secondary Crushing

The Link-Belt Company, Chicago, furnished the belt conveyor equip-



Gallery-enclosed 17 deg. inclined conveyor comes up from primary to secondary crusher. This is a 54-in. belt of 2,200 t.p.h. capacity.

Screen house, with belt from secondary crusher coming in from right, and outgoing conveyors to stackers in center of picture.

ment including the pulleys, idlers, reducers, couplings, bearings, and drives used in conjunction with the more than 5¼ miles of Goodyear belting required for transportation of materials. All motors are by Westinghouse, except the drive power for the secondary crusher, which is a 250-hp. motor made by Allis-Chalmers. The McDowell Company fabricated conveyor structures and assembled the entire system of belts.

No. 1 conveyor belt from the primary to the secondary crushing department is 54 in. in width and has a conservative hourly capacity of 2,400 tons at 515 f.p.m. travel speed. This belt rises from the primary at 17 deg. to the secondary through a concrete-lined tunnel to the quarry floor and thence by an enclosed gallery to the surge splitter hopper above the secondary crusher scalping screens. These are distribution bins, designed to give better distribution and flow over the scalping screens.

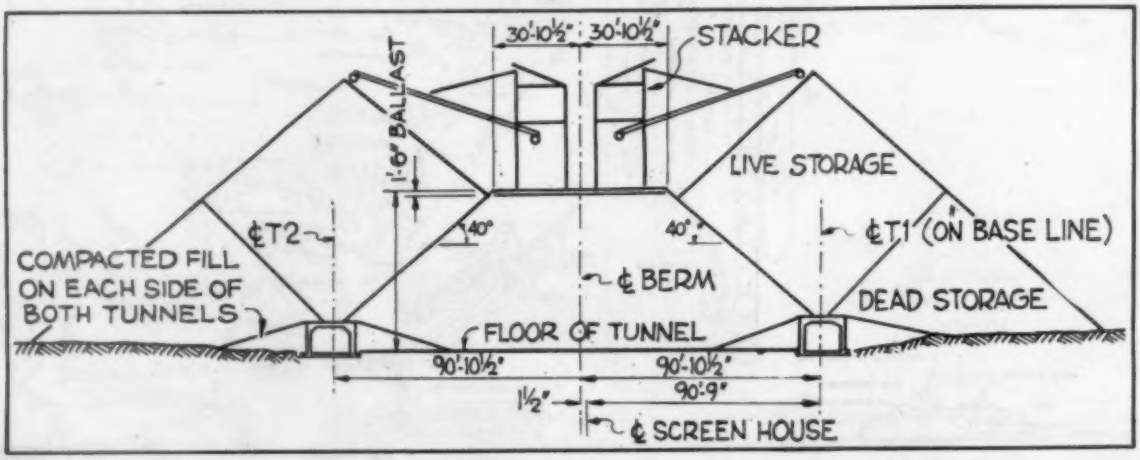
Material is fed out of the bottom of the surge splitter chutes by means of two Syntron F-86-DT electric-type vibrating feeders to the two 6- by 12-ft. Tyler Ty-Rock double-deck scalping screens, which have 10-in. openings in the top deck and 5½-in. in the bottom deck. The fines scalped off by the feeders, as well as the minus 5½-in. material passing the bottom deck, passes down through a chute onto the No. 3 conveyor belt for delivery to the screen house.

All material of plus 10-in. passing over the top deck of the screens is delivered to the secondary crusher, an Allis-Chalmers 30-70 gyratory reduction crusher having A-C Hydroset control. This is set at 5-in. maximum opening. The 10-in. x 5½-in. material passing over the lower deck by-passes the crusher and goes with the crusher product to the No. 3 conveyor belt for production of open hearth stone.

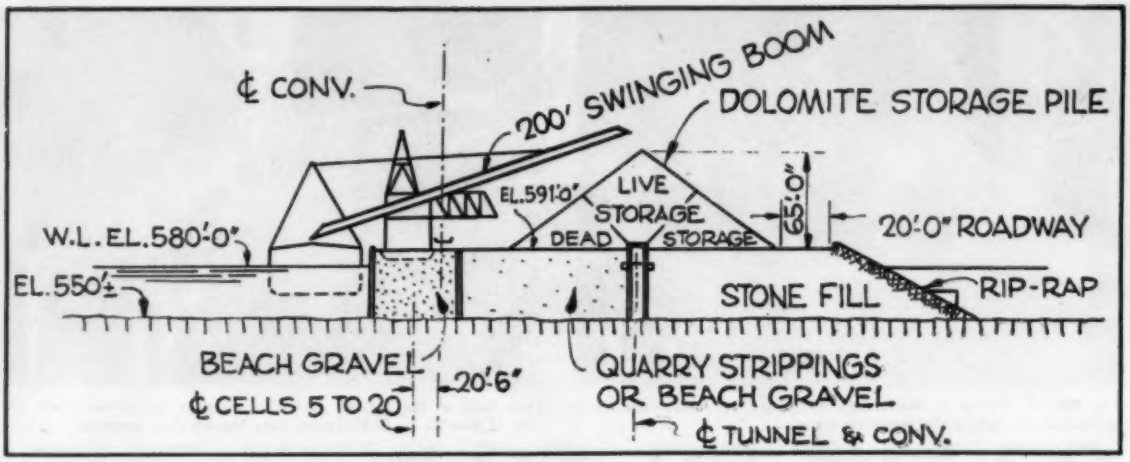
A monorail above the secondary crusher carries a 24-ton Yale & Towne Rail Hugger chain fall and trolley for removing the main shaft of the crusher for repair. The monorail extends through a wide door at the end of the building and is supported by a gantry extension, to permit loading the parts on a truck beneath.

Screen House

The No. 3 conveyor belt, 54-in. by 438-ft., rising from the secondary crusher through an enclosed gallery, delivers stone to the surge bin at the top of the screen house. The belt speed is 550 f.p.m. and capacity is 2,400 t.p.h. The 400-ton capacity surge bins provide a 12-minute run of either the crushing plant or the screening plant, and neither is forced to stop on delay of the other. Four banks of screens, each with a capacity of 600 t.p.h. or a total of 2,400 t.p.h. maximum are provided here. Each bank consists of four Tyler 6- by 14-ft. Ty-Rock heavy-duty, double-deck screens with the following screen cloth sizes: 10-in., 5½-in., 3-in., 1½-in., and ¾-in.



Section E-E, across stockpiles, looking west.

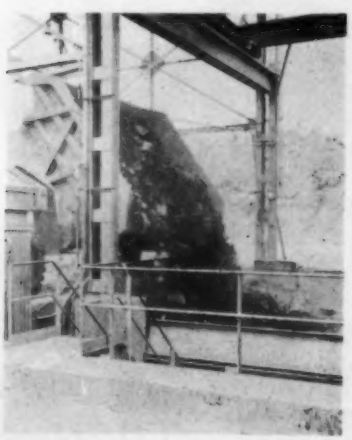


Section G-G, across dock area, looking north.

Screen Openings	10"-5"	5"-3"	3"-1½"	1½"-¾"	¾"-0"	
Percent	1.8	36.0	30.3	11.9	20.0	Secondary Crushing of plus 5"
Percent	32.3	22.3	21.8	8.2	15.4	Secondary Crushing of plus 10"

Stone is fed from the bottom of the surge bins by means of Syntron dual twin electric vibrating feeders to each of the screen banks. These feeders are variable-voltage controlled, which gives much flexibility in the rate of feed to the screens; they also provide excellent distribution of material on the screens. The four double-deck screens in each bank provide the separations given previously and deliver these various sizes to seven supply conveyor belts S1 to S7 inclusive. Screen openings can be changed from time to time to make the size of material required. The sizes are not rigid, and the quantity of each may be varied by means of the "Hydrosets" to smooth out plant production in meeting the various product demands shown.

Each of the distributing belts D1 through D7 has its own Weightometer Type E (Merrick Scale Manufacturing Co., Passaic, N. J.). A blender is used in conjunction with the Weightometer on belt L1A on the dock. This is a variable speed drive (d.c.) actuated by the limestone passing the Weightometer to get the required ratio at all times. The nine units used in the plant vary in capacity from about 750 t.p.h. to the 5,000-t.p.h. capacity of the unit on the dock. They are built to handle quantities of stone from 120 to 5,000 t.p.h. The dock unit will pick up 1/100th of a ton, while the smaller units will measure and weigh down to 1/1,000th of a ton. The belts under the various units are suspended on 2, 4, 6, or 8 idlers. The drive and takeup for the D7 belt is located in the junction house, while the drives for the remainder of these belts are in the stackers.



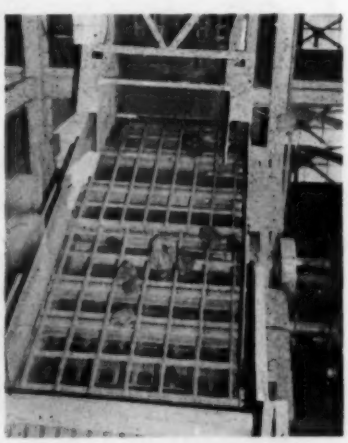
A 35-ton load goes into the primary crusher, the side-dump body being tilted by a standard dumping rig on the crane.

A screen house operating station is on the top floor of the screen house, a point from which the operator has a view over the secondary crusher, the distributing stackers, and the stockpiles. This room contains the central control for the entire plant, with the exception of outgoing facilities. The operator is in touch with all parts of the plant by the inter-com system of telephones. His operating control desk has selector switches for setting up the plant to make whatever product is required. The room is insulated and heated by electric heaters.

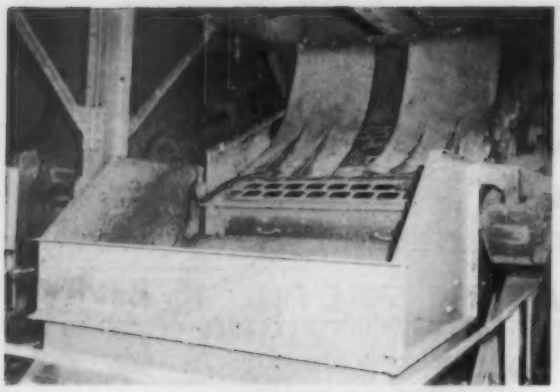
A freight elevator is provided for access to the various floors. A 5,000-gal. tank above the control room holds filtered water and provides water pressure throughout the plant. The main electrical substation is located north of the screen house.

Wide ranges of product sizes can be obtained by the Hydroset adjustments of the openings of the A-C secondary crusher. An infinite number of secondary settings may be chosen. Since the feed to the secondary crusher of plus 10-in. stone is so small, a 4¾-in. o.s.s. (open side setting) on the secondary would serve as an example of a typical product analysis, when a 7½-in. o.s.s. of the primary crusher is used. If the analysis is based on the secondary crushing of all stone over 10-in., with a primary crusher o.s.s. at 7½-in., and of the secondary at 4¾-in., the quantities of the different sizes in percentages of the total sample would be shown as in the above table.

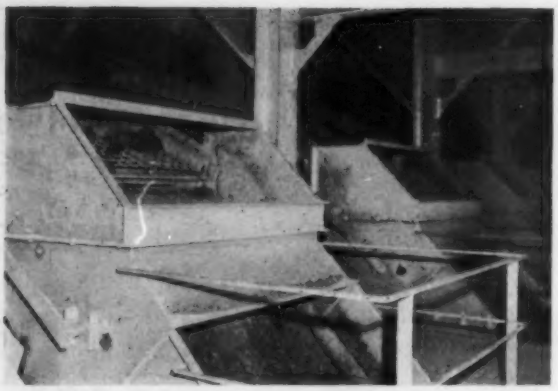
Primary crusher o.s.s. can be 7½-



Scalping of plus 10-in. stone ahead of secondary crusher.



Top tier of screens in the screen house are set below the surge splitter chutes taking the incoming stone.



Each bank of the second deck of screens in the screen house consists of four 6- by 12-ft. heavy duty, double-deck screens.

in., 8½-in. (recommended) or 9½-in. Secondary o.s.s. can be 3¾-in., 4¾-in. (recommended), 5¼-in., or 6-in.

Distribution to Stockpiles

Another feature of the Presque Isle operation is the distribution to the stockpiles, provided by the five movable stackers located on the berm north of the screen and junction houses. Material is deposited in these stockpiles as the stackers move to the storage of the particular sizes on which the plant is working, making five material grades.

The stockpiles are 90 ft. in height, and the space allotted affords a total storage of around 500,000 tons of material. Retaining berms were first built up with stripped and compacted fill was placed on each side of both tunnels. The recoverable storage capacity is approximately 210 tons per linear foot of stockpile.

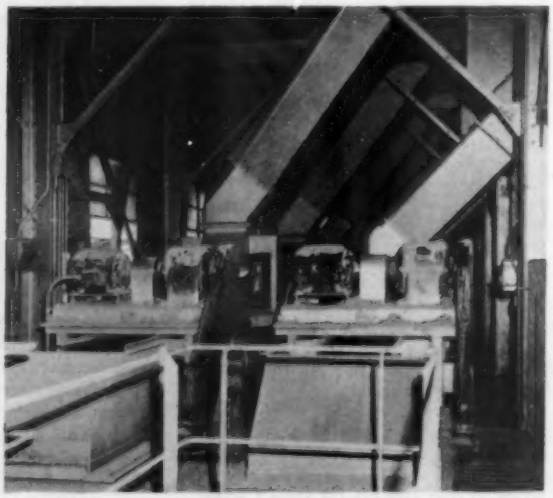
The stackers (five movable and one fixed), custom-designed and fabricated by the McDowell Company, use Goodyear belts of 78-ft. or 75-ft. lengths (c. to c. of pulleys). All belts run at 350 f.p.m. and have capacities of 900 t.p.h. (36-in. width), or 600 t.p.h. (30-in. width). These are powered by Westinghouse motors of 40 or 25 hp. The stacker inclination can be varied from 18 deg. above to 20 deg. below the horizontal, so that the least degradation of the stone will occur on the discharge of the stacker regardless of the height of the stockpile at any time. Wellman Engineering Company, a division of the McDowell Company, furnished the trucks and automatic rail clamps used in the stackers.

Recovery Tunnels

A concrete reclaiming tunnel runs under each of the two lines of stockpiles. As previously mentioned, these tunnels have been built on rock for proper support of the weight of material above them. They contain the 60-in. wide recovery belt conveyors T1 and T2. Gate opening measuring 6 by 6 ft. are spaced every 16 ft. in the tunnels, providing for delivery of materials onto these belts through four traveling tunnel chute cars (two in each tunnel), blended in the ratio of sizes desired. Each tunnel belt is 1,418 ft. long, moving at 550 f.p.m., with a capacity of 4,500 t.p.h. The gates and cars in the recovery tunnels were fabricated by the McDowell Company.

Material is moved from tunnel T1 or tunnel T2 (the latter delivery to T3 conveyor) for cross transfer to the T1-T3-T4 junction. From this point the material passes to the rescreening station and thence to the dock for loading into the lake vessels. The system of tunnel chute car feed

Dual twin electric feeders at top of screen house feeding four lines of screens.



Loading points on conveyors S5 and S6 in screen house, two of seven supply conveyor belts.

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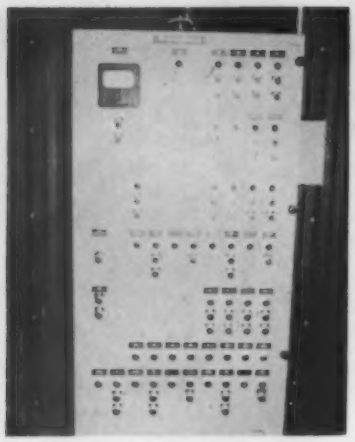


Central electrical control panel in the operating station on top floor of screen house has selector switches for setting up plant to make any sized product required.

permits a very close adjustment of the amount of material on these main line conveyor belts.

Re-Screening Station

The 60-in. main line conveyors from the ends of the recovery tunnels deliver stone for ship-loading to the re-screening station. The material is divided onto two 6- by 16-ft. double-deck Tyler vibrating screens located directly above the dock trunk line belt. These screens will handle 2,250 t.p.h. each (maximum) and remove any fine material from the fluxes which might have accumulated since leaving the screening plant. These fines are passed back by means of two 30-in. wide belt conveyors—R1, 360 f.p.m., 300 t.p.h., to the junction house; and R2, 385 f.p.m., 300 t.p.h., to the re-screen stacker R3. This stacker serves the 10,000-ton re-screen storage stockpile located over the T2 reclaim tunnel.

In the case of cement stone, or materials not requiring re-screening or removal of fines, such material is by-passed directly through the re-screening station for re-delivery to the main line dock conveyor L1.

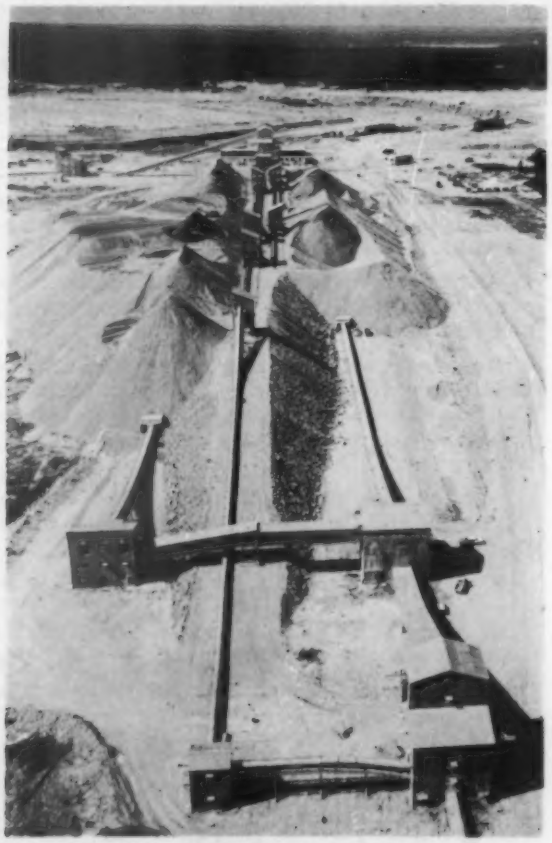
Dock

The dock was erected approximately 900 ft. offshore and is generally parallel to the shore, providing ample water depth for shipping with good maneuvering margins. Access to the dock is by a stone fill causeway with rip-rap slope composed of 5-ton boulders. The 22 circular sheet steel piling cells which make up the dock proper are 54 ft. in diameter. They are connected by sheeting diaphragms which are driven to obtain some penetration of the lake bottom and which project 12 ft. above the normal lake level. The cells and areas enclosed by the sheeting are filled with stone, the last 2 ft. composed of fill ballast and screenings.

On the Lake Huron side of the dock a wave-spending beach of boulders minimizes any effect which wave action might have on the filled material. It provides a substantial protection to the conveyors and other operating facilities on the dock.

Ship Loading

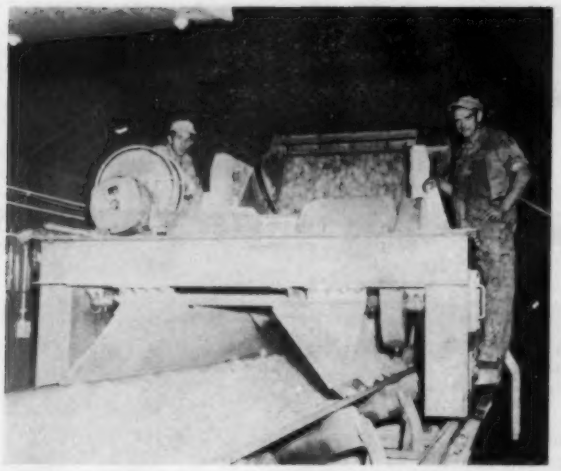
The main trunk line conveyor L1 transfers material at the weigh house to a belt conveyor L1A, which passes over the recording Weightometer and which transfers material to conveyor L2, which is interlaced into



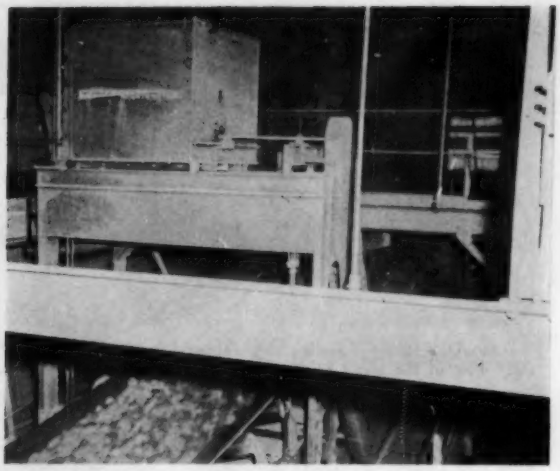
Looking toward quarry from top of weigh house. Re-screen house is in foreground, with the two main line recovery belts at each side coming from under stockpiles of over 500,000 tons.

View to south along berm between stockpiles, looking toward quarry, showing stackers and feed belts. The stockpiles are about 90 ft. in height.

From north end of berm, looking toward Lake Huron, are seen the re-screen house (left center), the three junction houses, the two main line belts from recovery tunnels, and the loading dock in background.



In one of the two recovery tunnels under the stockpiles, showing the 60-in. belt taking out 4,500 t.p.h. through two traveling tunnel chute cars in each line.



Weight house interior showing 5,000-t.p.h. weighing-measuring unit recording flow of material on belt conveyor L1A going to dock conveyor L2.

a traveling ship loader. The discharge boom on this loader has an adjustment in elevation of 21 ft. 9 in. (maximum), a shuttle extension of 40 ft., a boom elevation above water of 33 ft. (maximum), and 11 ft. 3 in. (minimum), and is capable of loading ships of 75-ft. beam. Conveyor L2 travels 550 f.p.m. and has a capacity of 4,500 t.p.h.

The loader is self-propelled, has a travel speed of 75 f.p.m., and travels on two 175-lb. rails supported by ballasted ties. The machine is carried on three wheels at each corner and is equipped with two automatic rail clamps (interlocked with an anemometer) which provide for safety against wind damage.

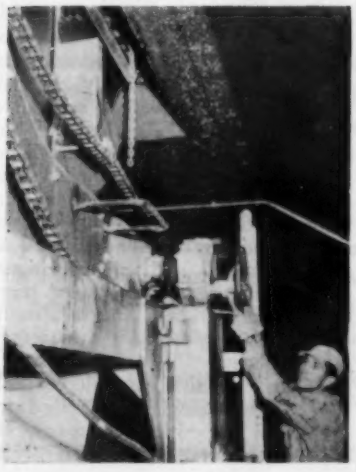
The operator of the ship loader is located in a control cab set at a high vantage point overlooking the deck of the vessel. He has a full view of the 72-in. shuttle belt of the ship loader, the trunk line conveyor L2, the entire dock, stock pile, and the conveying system from the main stock piles onward. Electrical controls in this cab govern movement of the boom hoist and shuttle belt. In case of a power failure, standby power is provided in the No. 1 drive house, where temporary supply from a gasoline motor generator set is of sufficient capacity for lighting and equipment, and to rack the shuttle or raise the boom in an emergency.

Other Facilities

A maintenance and service building west of the screen house provides facilities for truck repair, storage of spare parts and supplies, a quality control laboratory, and a locker room for employees. The building, 100 ft. by 200 ft. in area, has a structural steel frame and concrete block side walls, with large areas of glass for proper lighting.

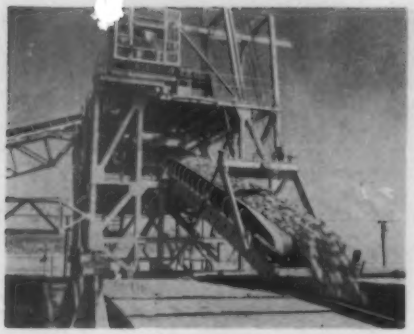
An Ingersoll-Rand 326-c.f.m. electrically-driven air compressor of the air-cooled type with automatic controls and an air receiver is also located in this building. It provides compressed air service to the various buildings and other facilities. In the center bay is a 10-ton P & H traveling crane, with pushbutton control from the floor.

A 50- by 100-ft. concrete block office building affords space for supervisory personnel, accounting, payroll, and other office functions. It is located to the southeast of the secondary crusher building. For servicing hauling units with fuel, lubrication, washing, and for a routine daily service check there is a 40- by 55-ft. truck service building. It is furnished with pumping equipment and storage tanks for gasoline, diesel oil, water, compressed air, and a complete lubricating system. A stores building 75 ft. by 150 ft. in area

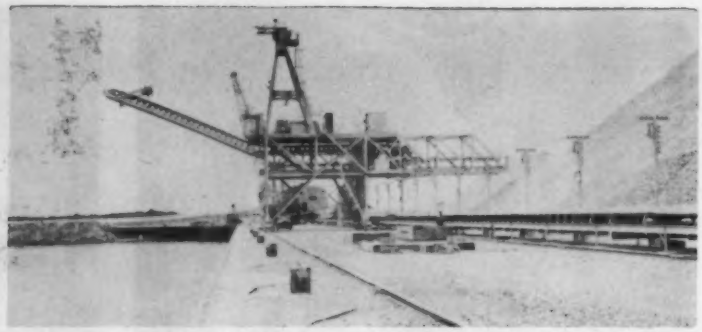


Left: Traveling tunnel chute car opening one of the gates in the 6- by 6-ft. opening under stockpile above. This permites very close control of the blending of the required sizes.

Right: View on dock, with conveyor L2 at left and stone-carrier vessel being loaded by ship loader.



The operator in the traveling ship loader has a clear view of the ship's hold.



Looking north on dock, with ship loader (center) and dolomite stockpile to right. Lake Huron is to the left.

provides space for storage of supplies and miscellaneous equipment.

The secondary crusher house, screen house, and other buildings are of steel frame construction with 22-gauge corrugated siding walls and 20-gauge roofs.

Power purchased from the Consumers Power Company, Jackson, Mich., comes into the plant at 141,000 volts to the high-voltage electric substation southeast of the office building. Here it is stepped down to the voltages required by various equipment and lighting circuits.

Intraplant communication is by direct telephone dialing to all important points of operation. Communication with the stone carrier vessels on the Great Lakes enroute to Presque Isle for pickup of loads is accomplished by Marine Radio through the Rogers City, Mich., radio station. Direct conversation is thus afforded with the captains of the vessels, so that plant personnel is informed of required blending for the cargo wanted, the estimated time of arrival at the Presque Isle dock, delays, and other pertinent data necessary to a smooth operation.

Four Allis-Chalmers HD20 tractors are used in the operation, mainly for moving materials on the stockpiles. Other miscellaneous movable equipment includes a Euclid 14DT scraper, a Caterpillar No. 112 grader used for cleanup work in the quarry, an Ingersoll-Rand No. 351 portable compressor, and a Lincoln 300-amp. welder.

Personnel

One of the features of this operation is the high ratio of production per employee. In producing the 5,000,000 ton-per-year output in two 10-hour shifts daily only 185 employees are required. They are allocated to the following divisions of the work: 72 in the quarry operation—12 in drilling, 8 in blasting, 20 in shovel crews, 22 in trucks, and 10 in bulldozing or other utility work in the quarry; 31 in the mill section—12 in crushing operation, 10 in screening, 6 in stacking, and 3 as utility laborers; 20 in boat loading; and 46 in maintenance work throughout the plant. In addition, there are 16 supervisory employees.

In addition to the executive personnel previously mentioned, Norman D. Shafer is general manager of the plant, Robert H. Allen is general superintendent, and William H. Wright is night superintendent. Project engineer for John F. Meissner Engineers, Inc. is Chet Kukulski.

Supervisory personnel of the plant includes (left to right): Jack Schuler, night mill foreman; Byron Lamb, plant chemist; Victor Brousseau, dock foreman; Norman Shafer, general manager; R. H. Allen, general superintendent; C. V. Wade, maintenance foreman; Harry Dewey, mill foreman; Wm. H. Wright, night superintendent; Tom W. Connon, quarry foreman; V. J. Kryst, electrical engineer; Ed Nowak, night quarry foreman.

Chemical Industry Exposition Displays Equipment Advances

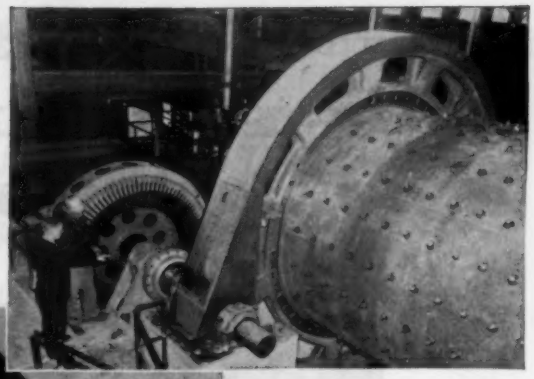
Some examples of the remarkable progress made in the sciences and arts of applied chemistry and chemical engineering will be revealed at the 25th Exposition of Chemical Industries in Philadelphia next December 5-9. Included in more than 500 exhibits will be displays of processing equipment, powerful enough to reduce the toughest minerals to powder, and complete plant models.

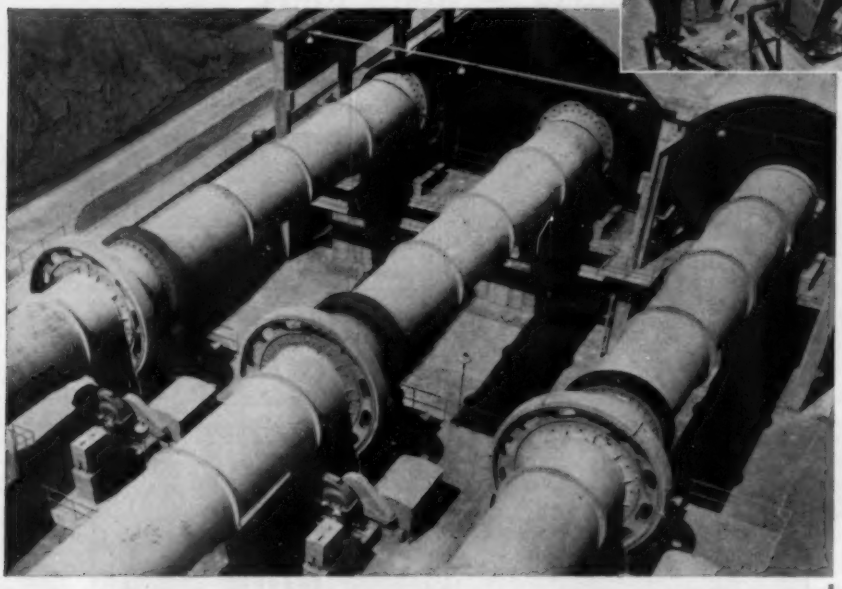
Crushers that can handle waxlike, semi-sticky, or caked-up material will be exhibited. In the field of welding, there will be samples of cold-forming applications to butt welding fittings, and welding rods that produce strong, corrosion-resistant welds with many dissimilar alloy combinations. A double screw pump for transfer of high-viscosity liquids at high speeds, and a newly designed hydraulic pressure-exchanger pump for handling 125 g.p.m. of abrasive products at 2,000 p.s.i. pressures will be displayed.

This extensive exposition will be under the management of the International Exposition Company, 480 Lexington Ave., New York 17, N. Y.

FALK

Modern Gears for Modern Needs





ABOVE: A 10 ½′ x 12′ ball mill with Falk helical gear and Steelflex coupling.

LEFT: 10′ x 340′ rotary kilns driven by Falk single helical gears, reducers and Steelflex couplings.

Are your costly gears wearing out? Falk Helical Gears wear in!

Operators and engineers know that the action of ever-present abrasive particles on gear teeth is the arch-enemy of gear performance and gear life. They know that, when spur gears are used, abrasion tends to damage the tooth profile (thus lessening the smoothness of power transmission)—and ultimately destroy the gear teeth.

The sure way to reduce costly gear damage to an absolute minimum is to use Falk Precision-Hobbed Helical Gears. On these, the gear teeth are on a helix; this means that all phases of profile contact ("rolling" and "sliding") exist at the same instant. Pressure and abrasive wear on "sliding" tooth surfaces are reduced, smooth transmission of power is assured, and *the life of gears and connected machinery is extended.* With several teeth sharing the load at all times, the teeth actually wear themselves *in,* instead of *out!*

You will find long-range economy in specifying "Gears by Falk" whenever you expand or revamp your facilities. Falk is *the manufacturer* best prepared to recommend and produce the exact helical gear—single or herringbone type—most suited to your application. Falk's leadership in precision gearing is recognized the world over.

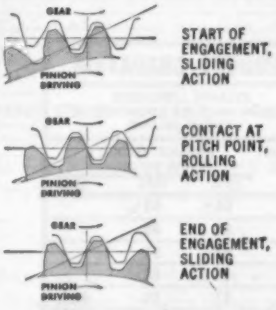
Consult the Falk representative nearest you—
also, **write for Report 6170,** "Advantages of Helical Gearing."

THE FALK CORPORATION, 3001 WEST CANAL ST., MILWAUKEE 8, WISCONSIN

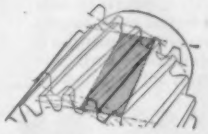
GEAR FACTS FOR ENGINEERS

As each spur gear tooth picks up the full load, the relative motion between the driving and driven tooth is a sliding action. As rotation continues, this motion becomes rolling at the pitch point, changing to sliding action again as the tooth advances toward disengagement.

PHASES OF INVOLUTE GEAR TOOTH ACTION

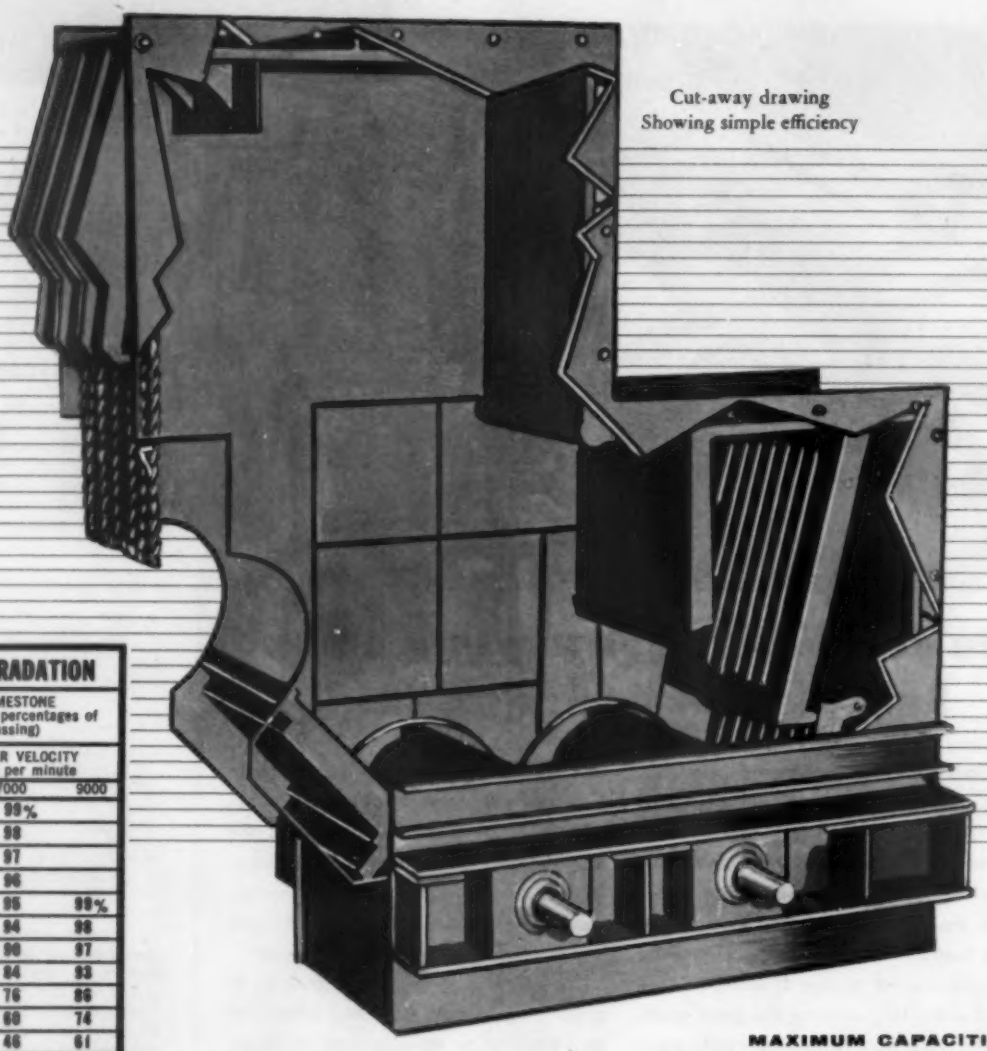


Helical gears have several teeth sharing the load. Teeth are simultaneously in all phases of contact across profiles, with contact starting at the tip of the teeth and extending obliquely to the base, thus reducing unit pressures. Also, portions which are rolling will limit the pressure exerted on portions which are going through sliding.



When abrasive materials contaminate the lubricant and get into the gear mesh, the more one can limit pressures in sliding areas, the less grinding action (hence wearing away) there will be.

GIVE YOUR AGGREGATE PRODUCTION A "LIFT" WITH



Cut-away drawing
Showing simple efficiency

PRODUCT GRADATION

AVERAGE LIMESTONE
(Figures noted are percentages of product passing)

PRODUCT SIZE	HAMMER VELOCITY in feet per minute		
	5500	7000	9000
3"	94%	99%	
2½	93	98	
2½	92	97	
2¼	91	96	
2	87	95	99%
1¾	84	94	98
1½	78	90	97
1¼	67	84	93
1	54	76	86
⅜	42	60	74
½	28	46	61
¼	15	30	45

Under certain circumstances, the Kennedy CUBER SENIOR can be easily adjusted to produce higher percentages of coarse cubical material. For further information, consult with Kennedy factory engineers.

MAXIMUM CAPACITIES
(in tons per hour)

CLOSED CIRCUIT

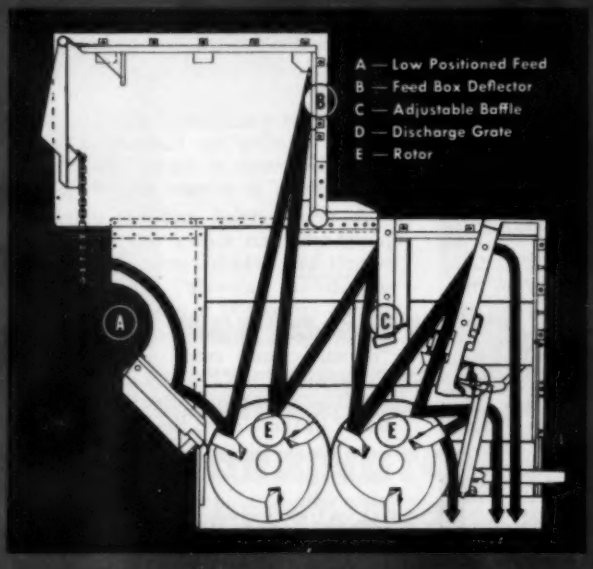
Minus 3 350
Minus 2 275
Minus 1 150
150-250 HP Required

KENNEDY-VAN

MANUFACTURING AND ENGINEERING CORPORATION

KENNEDY
CUBER SENIOR MODEL 3648

A new Multi Stage, Regulated Flow Impact Breaker
For Primary and Secondary Crushing.
Dual Rotor — Triple Action
PORTABLE OR STATIONARY Models



Cut-away sketch showing interior construction

A KVS DESIGNED CRUSHER for breaking non-abrasive stone and similar materials. Operates at variable speed to produce a wide range of aggregate sizes with *full gradation control. Built in Portable* or *Stationary models* to handle any quarry rock, freely passing the 36" x 48" feed opening.

LOW POSITIONED FEED DEVICE provides minimum feed height for maximum rock penetrations and elimination of "foul balls." Fast, direct shovel loading in portable models; lower truck ramp height provided for stationary units.

CONTRACTORS: Consider the advantage of this improved crusher in terms of time and money saving advantages in highway construction. Prepare your aggregates, mile by mile, eliminate costly trucking —speed-up road building—control aggregate sizes to suit your needs, ON THE JOB!

LET KVS ENGINEERS furnish these "on-the-job" operating facts that show how valuable this new type crusher has proved to be as a portable unit or stationary installation. It's in use on many of America's major highway projects.

DETAILS OF INTERIOR: A single welded unit of steel plate. Incorporates grate adjustment and safety device and also supports the breaker unit mounting on skid frames. Bearing support frames have removable top member for easy access to bearing housings.

Cast manganese steel wear plates line the interior of the reduction chamber, which has a large access door. Reduction chamber, 130 cu. ft. in volume.

THE ONLY MOVING PARTS in Cuber Senior are two identical rotors, each equipped with three rigidly mounted cast manganese steel hammers. Hammers have a single operating face, adjustable outwardly to compensate for wear. Heavy alloy steel shafts pressed and locked onto the rotor core. Self aligning roller bearings.

The discharge grate rejects over-size rock back to the hammers. Grate adjustment controls top size of finished material. Safety device protects machine from tramp iron damage.

SAUN

2 PARK AVE., N. Y. 16, N. Y. **FACTORY: DANVILLE, PA.**

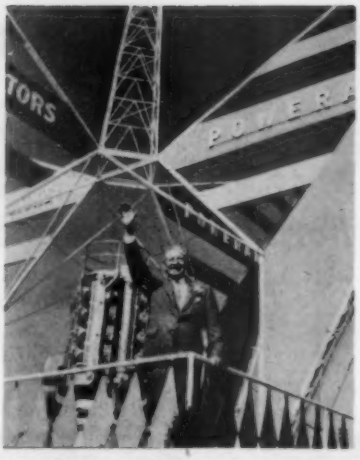
GM Powerama Proves to Be Entertaining and Informative

EVER see a 35-ton beauty do the mambo? You did if you attended the stage show at the General Motors admission-free, technological circus Powerama which attracted hundreds of thousands of visitors from all parts of the country during its run from August 31 through September 25 on Chicago's lakefront.

The big dancer was a bulldozer, and it along with other smaller machines, performed the feat to amuse the audience and graphically illustrate the maneuverability of even the larger mobile units in use today. The pieces of equipment exhibited also showed the trend towards incorporating beauty and comfort along with modern functionalism.

"More Power to You" was the title of the stage show, which also offered such items of interest as a "soap opera" cast with live elephants, a famous aerial team performing while suspended from the boom of a 20-ton crane, tractors in a "hoe-down", dancers, clowns, a style show on trucks, and a 25-piece circus band.

Powerama was planned for the celebration of the production of GM's 100,000,000th diesel horsepower. This represents enough power to run all of America's factories, ships, boats, and airplanes. Planned as a "World's Fair of Power" to focus attention on the unsung workhorse jobs of the nation done by diesel-powered machines, the project was conceived by GM President Cyrus R. Osborn.



Cyrus R. Osborn, GM president, welcomes the crowds at the "World's Fair of Power."

This 50-ton dump truck, converted into a mobile swimming pool, drew record throngs of visitors. The bathing beauties may have had something to do with that.

A panoramic view of the lakefront show staged by GM in Chicago to celebrate the production of its 100,000,000th diesel horsepower.

Good use was made of diesel muscles in building the Powerama, for it was necessary to move 7,000 cu. yd. of earth to prepare the site.

A newly styled and engineered passenger train shown was a lightweight unit which carries 400 passengers in "air-ride" comfort at speeds up to 100 m.p.h. Seven experimental "dream" cars and a "dream" truck could be viewed, along with the XP-21 Firebird, first gas turbine automobile built and tested in the United States.

A 50-ton Euclid dump truck was converted into a swimming pool, replete with bathing beauties. Drilling rigs, the Navy's "Pogo" vertical takeoff airplane, and a crane with which visitors could lift an 8,000 lb. breaker ball were some of the other items among the 253 displays. A complete Cedarapids portable plant actually crushed and screened rocks for the visitors.

At a specially-constructed dock in a lagoon adjoining the fair site was a marine exhibit including a 65-ft. Florida shrimp boat, a yacht, the largest tug on the Great Lakes, and the U.S.S. *Tautog*, a submarine.

Styling innovations were admirably displayed in the firm's new Twin Power TC-12 tractor. It is the design product of a group of stylist-engineers who improved driver visibility and increased working part accessibility over the pilot model and also style the unit so that it reflected its power and workability.

Powerama showed the many ways in which diesel power serves the nation.

IN THE CRUSHED STONE INDUSTRY, TORRINGTON *Bearings are used in many applications including crushers, screens, shovels, cranes, pulverizers, grinding mills and rotary kilns.*

TORRINGTON Spherical Roller Bearings

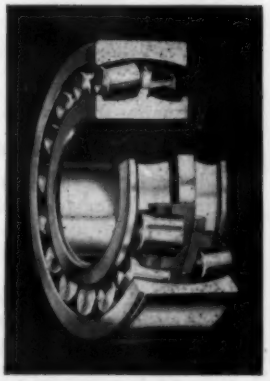
are manufactured with accurate geometrical conformity between races and rollers for ultimate capacity and performance.

Because conformity factors are uniformly high, rollers can operate with a minimum of friction and carry greater loads for a longer time.

There are other good reasons why TORRINGTON SPHERICAL ROLLER BEARINGS can guarantee superior performance. Races and rollers are precision ground to a high surface finish from the finest quality electric furnace steel available.

An integral center flange on the inner raceway gives positive radial and thrust stability against continuous high-speed, high-load conditions. Fully machined, cast-bronze, land-riding cages—one for each path of rollers—allow thorough lubrication, reduce wear and lengthen bearing life.

Specify dependable, rugged TORRINGTON SPHERICAL ROLLER BEARINGS in your equipment. They're available with either straight or tapered bore for shaft or adapter mounting.



THE TORRINGTON COMPANY
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TORRINGTON SPHERICAL ROLLER BEARINGS

Spherical Roller • Tapered Roller • Cylindrical Roller • Needle • Ball • Needle Rollers

CANADIAN CEMENT
A Growing Industry

IF all the cement plants are built in Canada which are being planned or discussed, together with those now under construction, they will add something like 9,000,000 or 10,000,000 bbl. a year to Canadian capacity.

That figure is about 40 percent of last year's consumption of cement in Canada; so it is obvious that the cement business in Canada is in considerable ferment. The new capital investment involved could run $80,000,000 to $100,000,000.

What's going on and what's ahead in the Canadian cement industry? This is the way things have developed to the present time.

In 1950 there were three cement companies in Canada—Canada Cement Company, which had an annual capacity of 14,000,000 bbl. and operated plants in Hull and Montreal, Que., Belleville and Port Colburne, Ont., Exshaw, Alta., and Fort Whyte, Man.; St. Mary's Cement Company, an independent, with a 1,400,000 bbl. plant in St. Mary's, Ont.; and the British Columbia Cement Company, controlled by United Kingdom interests, with a plant of about 1,300,000 bbl. capacity in Bamberton, B. C. These firms produced a total of around 16,700,000 bbl., of which Canada Cement had an overwhelming 84 percent.

Today there are six companies in the business. Total capacity runs to around 25,000,000 bbl. Canada Cement's total has risen sharply, too, to around 19,000,000 bbl., but its share has been sliced back to 76 percent of the total national output.

How It Happened

High fixed costs constitute an outstanding characteristic of the cement business. Good earnings depend largely on keeping plants going at a high rate.

Capital cost for new capacity today can run to around $10 per barrel. The return each year, on current prices, is $2.50. That is a ratio of one to four. Many industries have a ratio of one to one, or lower.

The break-even point on new capacity is very difficult to estimate, since it depends so heavily on depreciation policy. But if a firm charges 10 percent, for instance, $1 is marked up at once against that $2.50 return. On the other hand, 10 percent is high for a cement plant; 5 percent would be more accurate, or 50 cents per barrel. In any event, one authority estimates that perhaps 70 percent would be a good round figure at which a new plant would have to operate to make a profit.

Before 1945 cement plants in Canada rarely operated as high as 70 percent of capacity. Preferred share dividend arrears piled up through the 30's and early 40's. Common share dividends were halted after 1927, and were not started again until 1950. The industry had a rough time, although it did always manage to make a profit. Consequently, for a long time, there was little incentive for newcomers to get into the cement business, in Canada.

Even after conditions had changed, and cement shortages began to appear, there was no great rush. For one thing, Canada Cement was so strongly entrenched, and had built so much of its plant at lower cost levels, that it loomed as a tremendously tough competitor. Moreover, Europeans were busy rebuilding their own shattered economies, and U. S. producers were busy expanding rapidly to fill their own customers' orders.

Canadian cement consumption was down a slight 0.5 percent; Canadian producers' shipments were up 5 percent. In 1951 consumption rose by 6.6 percent, and Canadian shipments by 1.9 percent. In 1952 consumption was up 10.9 percent, and shipments 8.8 percent. The following year consumption continued to rise by 10.8 percent, and shipments were up 20 percent. A year later (1954) Canadian shipments recorded a 0.9 percent gain, and imports flowed in at a 2,300,000-bbl. clip, down only 200,000 from 1953.

Throughout these years, Canada Cement was pushing ahead rapidly with its own vast expansion program. From 1950 to the end of 1954, it laid out nearly $36,000,000 on capital account. It will spend another $10,000,000 this year. Capacity has been upped in Alberta, Manitoba, and Ontario, and a new plant has been built in New Brunswick.

New Competition

It was about 1950 that the first new competition (not counting expansion programs of St. Mary's and B. C. Cement) began to appear.

Premier Smallwood of Newfoundland was getting his ambitious program of industrial development under way, and one of his first ventures turned out to be a cement plant at Corner Brook on the west coast of Newfoundland.

Construction of the new North Star Cement Company's plant got under way in 1950, and was finished in 1951. Half of its 600,000-bbl. annual capacity, it was said, was expected to be sold in Newfoundland, and the rest in Maritime markets.

After construction of the Newfoundland plant had started, Canada Cement began building a 600,000-bbl. unit at Havelock, N. B.—its first in the Maritimes. The area was at that time being served by the company from its Montreal East plant. Freight rate increases, coupled with strong demand, had made a separate plant more feasible.

As it turned out, North Star is now selling about 55 percent of its 600,000-bbl. capacity in Newfoundland. But the company has had difficulty in mainland markets, and apparently little luck in the Maritime provinces. Most mainland sales have been to the Great Lakes area, where there has been a shortage in local supplies.

The second newcomer to the business was Ciment Quebec, Inc., which built a plant at St. Basile, near Quebec City. It started producing late in 1951, and at last report has raised capacity to around 2,100 bbl. a day.

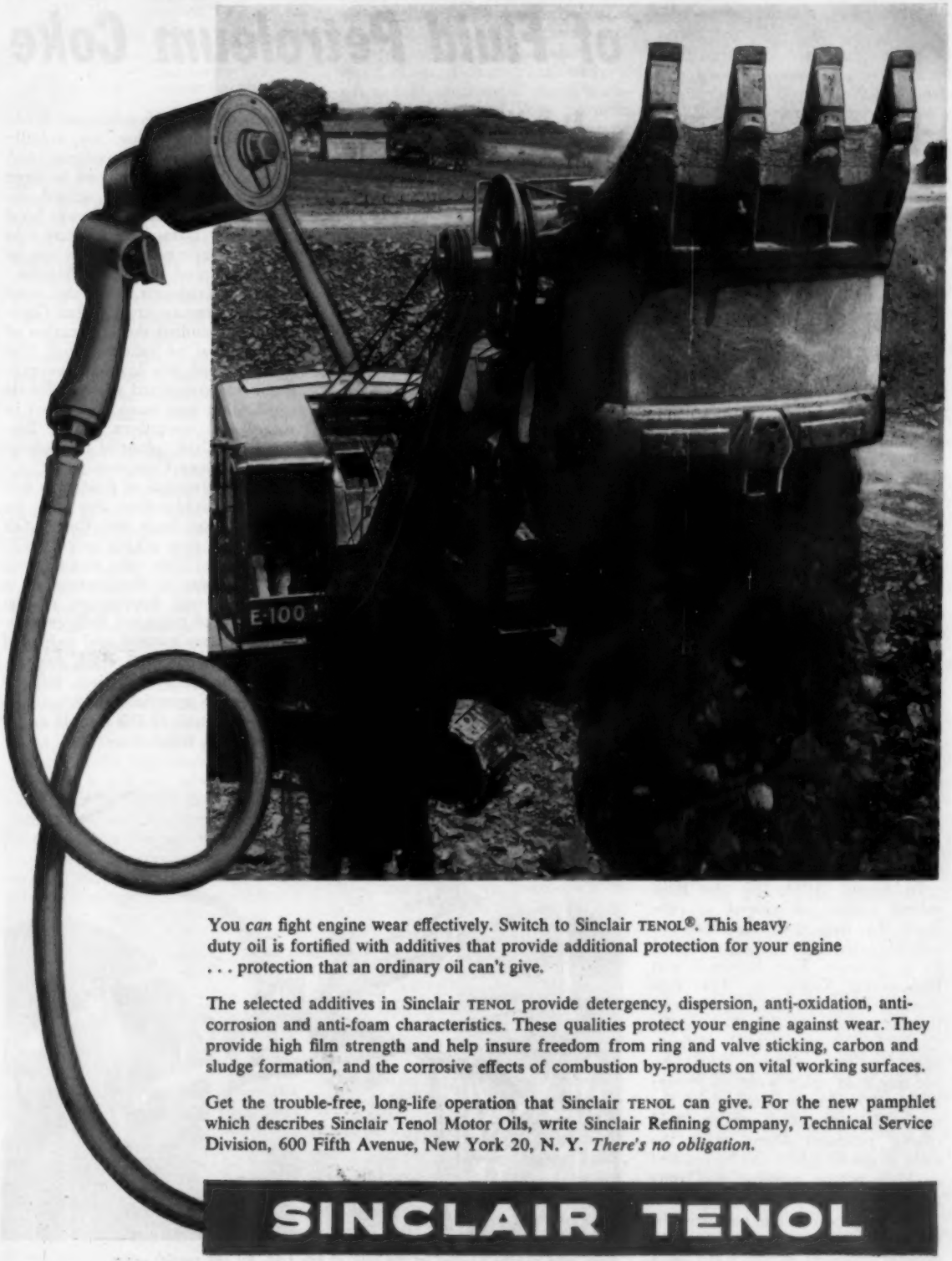
Then another and larger plant went into operation near Quebec City, under the name of the St. Lawrence Cement Company. Backed by Swiss interests, the $12,000,000 facility began operating late last year. This plant has a capacity of 1,500,000 bbl. annually.

The St. Lawrence plant was the first dollar-backed evidence of European interest in producing cement on this side of the water. This enterprise is now being followed by several others.

A part of this interest is due to completion of many overseas expan-

(*Continued on page* 77)

FIGHTS WEAR!



You *can* fight engine wear effectively. Switch to Sinclair TENOL®. This heavy duty oil is fortified with additives that provide additional protection for your engine . . . protection that an ordinary oil can't give.

The selected additives in Sinclair TENOL provide detergency, dispersion, anti-oxidation, anti-corrosion and anti-foam characteristics. These qualities protect your engine against wear. They provide high film strength and help insure freedom from ring and valve sticking, carbon and sludge formation, and the corrosive effects of combustion by-products on vital working surfaces.

Get the trouble-free, long-life operation that Sinclair TENOL can give. For the new pamphlet which describes Sinclair Tenol Motor Oils, write Sinclair Refining Company, Technical Service Division, 600 Fifth Avenue, New York 20, N. Y. *There's no obligation.*

SINCLAIR TENOL

Kiln Firing of Fluid Petroleum Coke

By R. M. CORNFORTH
and
E. R. LEE JR.

Kaiser Engineers
Division of Henry J. Kaiser Company
Oakland, Calif.

HISTORICALLY, the petroleum refining industry has been faced with the problem of reducing the percentage yield of residual fuel oil based on crude oil. Since this is the only major petroleum product selling for less than the cost of crude oil, there is a considerable economic incentive for reducing the yield of residual fuel oil, with an accompanying increase in lighter products.

The total annual demand for residual fuel oil in the United States has remained substantially constant during the period 1950-1953, and showed a reduction of about 7 percent in 1954. During this time the demand for gasoline and light products has been steadily increasing. Forecasts indicate that this trend toward a reduction in residual fuel oil and an increase in lighter products will continue.

The refining industry has utilized various processing methods for reducing the percentage yield of residual fuel oil, including visbreaking, vacuum distillation, propane deasphalting, and delayed coking. All of these methods have been used not only in the reduction of residual fuel oil yield but also in the increase of gas-oil suitable as charge stock for catalytic cracking. This in turn has increased the production of high octane gasoline and distillate fuel oils to meet the changing market requirements.

In August, 1953, the new fluid coking process, developed to produce the maximum reduction in residual fuel oil yield was announced by its licensor, Esso Research and Engineering Company. The first commercial application of this continuous process was installed by the Carter Oil Company at its Billings, Mont., refinery, where a 3,800-bbl. per day fluid coker went on stream in late 1954. In comparison with the earlier delayed coking process, fluid coking produces about twice the yield of gas-oil which can be cracked to high octane gasoline and only about half the yield of coke.

The by-product coke produced by the fluid coking process is a new industrial material in the form of a dry, hard, granular solid having roughly the particle size of coarse sand. It is composed of approximately 90 percent carbon with the other constituents varying considerably, depending upon the source of the crude.

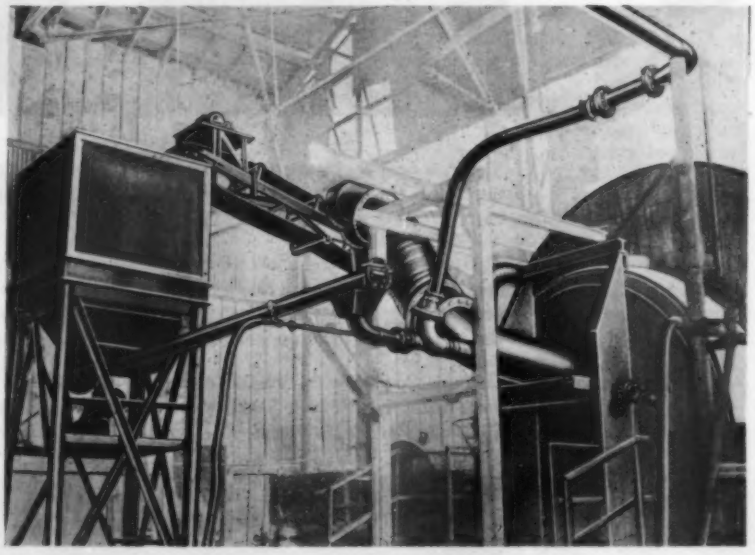
From the standpoint of the petroleum refining industry, the problem is not in the facilities for the production of fluid coke but rather in the development of suitable markets that will utilize the potential of this material. A substantial amount of research and development work directed at new market applications for fluid coke has been and is being carried on by different groups in several fields of industry.

Although it is likely that some high-value usages can be developed, such as carbon electrodes for use in the electrolytic reduction of alumina to aluminum, it appears that the ultimate base load for this material will be as a fuel. In this use it should have wide application because it has a high heating value, low volatile matter, and low ash content, and because it can be produced in large quantities at widely separated refinery locations. It has already been successfully burned in a rotary kiln and is equally adaptable for use in oil heaters and boiler installations.

Kaiser Engineers, with the assistance of Permanente Cement Company, has studied the application of fluid coke as an industrial fuel. The first cycle of this investigative program was completed when full-scale combustion tests were conducted in rotary kiln operations at the Permanente, Calif., plant of the Permanente Cement Company.

A 50-ton sample of fluid coke was obtained in March of this year for test purposes from the Carter Oil Company's new coking unit at Billings, Mont. This coke was shipped from Billings to Permanente in a closed railroad hopper car of the type used to transport bulk cement. The car was spotted and unloaded over a conventional track hopper. An open dump truck was used to transfer the material to the test site.

The analysis of this sample as received is as follows:



Fluid coke can be handled at the rate of 6¾ t.p.h. by this special setup.

Screen Analysis		Composition	
Screen Size	Cumulative % Retained		Weight %
8	5.2	Carbon	89.1
35	11.1	Sulphur	6.0
65	48.6	Volatile (1742°F.)	3.8
100	80.1	Ash	0.16
200	95.8	Vanadium	0.03
		Nickel	0.01
		Net heating value Btu/lb.	14,300

At Permanente there are five rotating kilns which are among the largest in the cement industry. These kilns are 450 ft. long, 12 ft. in diameter, and are inclined at ½ in. per foot. The average speed of rotation is 57 r.p.h., with an average clinker capacity of 4,000 bbl. per day each.

These kilns are normally fired with natural gas purchased from the local utility at an average of 948,000 cu. ft. per hour. During the coldest months each year Bunker C fuel oil is used. Fuel is admitted to the kiln by a burner which extends 8 ft. into the discharge end of the kiln. The burning zone begins approximately 15 ft. from the hood and is about 50 ft. long. Primary air for combustion is provided by 75-hp. fans. It is in the combustion zone, where the temperature reaches 2,900 deg. F., that the majority of kiln reactions occur. The back end or feed end temperature of the kiln is approximately 700 deg. F.

Of the five kilns at Permanente, kiln No. 1 was selected for the fluid coke testing, due primarily to its ease of access and adjacent space for setting up test equipment. Surplus material and equipment around the plant was used wherever possible. Because of the high plant production schedule, it was not possible to shut down the kiln either to make modifications in the burner arrangement or to assist in the actual tests. This requirement made mandatory the use of existing 4-in. diameter oil burner housing and adapting it to handling coke in a high-velocity air stream.

The fluid coke was transferred from the open dump truck to a 7-ton elevated bin adjacent to the kiln by means of a bucket elevator. To this bin was fitted a hopper bottom that connected directly to a 6-in. screw conveyor pipe. The conveyor screw was driven by a Vari-drive unit with a speed range of 4 to 1. Coke discharging from this conveyor was aspirated by compressed air through the special burner into the kiln. A maximum of 6¾ tons of coke per hour could be handled with this arrangement through the 4-in. burner port.

Preliminary runs were made on March 17, 18, and 22, 1955, burning the raw fluid coke as received without screening or grinding. The maximum firing used during these tests was about 3½ t.p.h. delivered to the kiln, with natural gas furnishing the balance of a necessary heat input. During these runs, each of which was of about 2 hours' duration, a drop-out of large particles of unburned coke was observed which were later found in the analyzed test clinker.

These preliminary tests suggested the potentialities of fluid coke as a fuel. Because of the drop-out of the larger particles, some of which were approximately ⅜ in. in diameter, it was decided that the coke should be ground to a more nearly uniform size for subsequent testing. Accordingly, about 10 tons of the coke were ground, having the following screen analysis:

Screen Analysis	Cumulative Percent Retained
16	0
50	1.0
65	11.0
80	20.1
100	50.3
200	75.5

Weight of ground material: tamped, 63.4 lb./cu. ft.; loose, 55.7 lb./cu. ft.

The methods developed by Kaiser Engineers lead us to believe that on a commercial basis this grinding can be done for less than 30 cents per ton.

A preliminary run with the ground coke was made on May 5, 1955. With the input of primary air for coke combustion at 600 c.f.m. and 80 p.s.i., and with 50 percent natural gas as the auxiliary fuel, the color, shape of the flame, lack of fall-out, and ignition 10 ft. beyond the nozzle indicated a performance almost identical with 100 percent gas flame. This was followed on Many 18 by a commercial-scale demonstration under similar conditions which was witnessed by representatives of oil companies and other large industrial firms. The limited supply of ground coke available permitted only a brief demonstration. The 14,400 lb. of coke in the hopper was consumed in 1.2 hours. The maximum firing rate of 13,500 lb./hr. was attained after a rapid buildup of coke flow during which the gas was reduced accordingly. Auxiliary firing of gas in reduced quantities was necessary to maintain input heat balance, but for several intervals of short duration the gas was turned off, permitting the kiln to operate entirely on coke. The normal natural gas fuel consumption of this kiln is approximately 212 m.c.f./hr. with 1,100 B.t.u./s.c.f. gas or 233,200,000 B.t.u./hr. Since the heating value of coke is 14,300 B.t.u./lb., about 17 percent of the normal gas flow was required to maintain the kiln temperature.

Sampling devices and other test equipment were set up well in advance of this demonstration in order to obtain the maximum amount of information during the test. Other than the temperature checks within the kiln itself, the sampling and testing was accomplished at both ends of the kiln—the clinkers for any significant change in composition, and the effluent gases for any significant change of analyses, particularly with respect to sulphur.

During the test the kiln temperatures rose from approximately 2,680 deg. F. to about 2,800 deg. F., and the back end or gas outlet end of the kiln rose from 680 deg. F. to 705 deg. F. The uptake draft was kept constant at 2 in. of water.

Samples of clinker taken during the run were analyzed as follows:

	Control	Test
SO^3	0.027%	0.034%
Free CaO	0.120	0.060
Ignition loss	0.090	0.000

The laboratory reported that these clinker samples appeared normal and analyzed as such.

The bulk of the sampling and testing was conducted at the back end of the kiln, directed toward analyzing the kiln effluent with particular reference to the sulphur content and its accompanying dangers of air pollution. An iso-kinetic probe, similar to a pitot tube, was used to take centerline gas and dust samples. The gas samples were analyzed by a Mine Safety Appliance Company H_2S detector, essentially a glass tube with a reagent coating of silver cyanide on aluminum oxide granules. The concentration of H_2S determined by four tests of the M.S.A. detector showed 0.0003 percent by volume on a dry gas basis.

A paper thimble was used to collect effluent dust. Sulphur compounds in the dust are in the form of both sulphate (calcium sulphate) at 16 percent and sulphite (sodium potassium sulphite) at 84 percent. Based on a rate of flow of 34.4 t.p.d. and corrected for the control run, the analysis ran 0.97 percent S and was equivalent to 27.4 lb. per hour of sulphur.

The total sulphur in the gas (H_2S and SO_2) collected in a Na_2CO_3 solution and condenser water com-

(*Continued on page* 98)

Systematic Maintenance Solves Problem

of excessive wear on equipment caused by high percentage of crushed material

By HARRY F. UTLEY

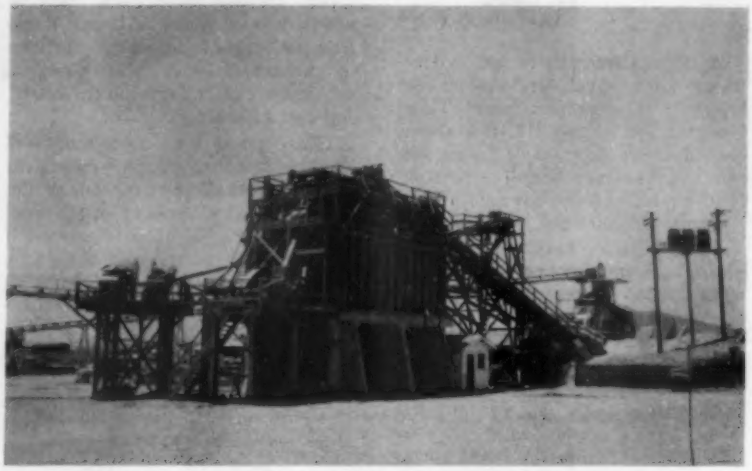
THE Buellflat Rock Company of Solvang, Calif., has conducted sand-and-gravel operations along the Santa Ynez River since 1938. The pit-run material runs heavy on oversize and much of this material requires crushing to bring it down to marketable gradation. Although the plant's capacity is only about 100 t.p.h., four crushers—2 of the jaw type, a fine gyratory, and a set of rolls—are employed in the flow-sheet.

Pit operations are carried on over a wide area of the sprawling bed of the river, dry most of the year. A Bucyrus Erie scraper, drawn by an International TD24 tractor, digs and transports 20-cu. yd. loads from the deposit to the plant hopper, the haul varying from ¼ to ½ mile. Rejects from the grizzly at the hopper are carried by a short belt-conveyor to a Telsmith 12- by 30-in. primary jaw crusher, the crusher product joining the grizzly throughs for transportation by a 200-ft. long belt conveyor to a scalper-secondary crusher station.

Material retained on the scalping deck of the Overstrom 4- by 12-ft. 2-deck screen is chuted to a Pacific 10- by 30-in. jaw crusher, the minus-1½-in. gravel is carried up to a Symons 4- by 12-ft. horizontal screen for washing and sizing (or further crushing), and the fines are passed to a pair of sand drags. Selected oversize from the Symons screen goes to either or both of two fine crushers, a Kueken 18-in. gyratory, or a Diamond double-roll crusher. The finely-crushed material is further washed, classified, and dewatered by a pair of Telsmith sand screws and the product may return to the sizing screen in closed circuit, or the crushed material may be separately stock-piled. As such, it is largely used in bituminized mixtures produced in a Madsen 3,000-lb. asphalt plant owned by the company and located on the premises.

Wash-water requirements of about 400 g.p.m. are supplied by a Berkeley turbine pump from an 80-ft. well drilled down into the river bed.

The high ratio of crushed material in the finished product, coupled with the fact that the river rock is extremely hard and abrasive, has caused the plant's owners, Herman G. Petersen and his son, W. G., and the plant maintenance welder, H. D. Sutcliffe, to institute a systematic program of hard-surfacing the jaw plates and crusher rolls. This wear-protection plan has tripled the life of the crusher components and



Washing and sizing of gravel and sand, and recrushing of oversize at the Buellflat Rock Company's plant, Solvang, Calif., is done in this structure. The horizontal vibrating screen is at the top; the two sand screws at the left.

The primary jaw crusher is fed by a short overhead conveyor from the plant hopper. The conveyor leading off to the right can surge-pile the crushed material, if this is desired.

Fine crushing, for the most part, is done in this choke-fed 18-in. gyratory crusher.

Worn crusher jaws being rebuilt with a manganese rod in preparation for the final overlay with coated-tube rod.

Maintenance welder Sutcliffe peens the manganese deposit between passes on the jaw plates which are being rebuilt.

Mr. Sutcliffe has developed an interesting procedure, particularly with regard to reducing warpage on the jaw plates.

Mr. Sutcliffe disdains the use of such conventional props as heavy clamps, water cooling, pre-bending and straightening to guard against warpage from the heat resulting during the deposition of hard-facing rod by welding. Instead, he merely sets up 3 or 4 worn jaw plates at a time on a convenient wooden platform and skip-welds from part to part, never permitting any one area to absorb enough heat to cause warping. Corrugations are built up to within two passes of finish size with Stoody Moly-Manganese electrodes. Each pass is hammer-peened and wire-brushed as the welding progresses. Coated Tube Stoodite is then applied as a final overlay.

Wear on the crusher rolls is also compensated by build-up with Moly-Manganese and Coated Tube rod. The work is done without removing the rolls, being undertaken during week-ends or other brief shutdown periods. Skip-welding is likewise used when the rolls are hard-faced, a checkerboard pattern of alternate 3-in. square patches being deposited until the entire roll is hard-surfaced. This requires four revolutions of the roll to complete just one pass.

Canadian Cement

(From page 72)

sion programs, and the growing preference of Europeans for Canada as a place to invest money. Part must also stem from Europeans watching millions of barrels of cement crossing the Atlantic each year to help fill Canadian needs.

There is also another factor. Canada Cement itself has expanded so fast in recent years that a large proportion of its total plant has been built at high post-war costs. This, some European interests feel, has definitely made others more willing to invest, since it cuts down the giant's competitive advantage.

Finally, outsiders must have watched Canada Cement's sharply rising earnings. Last year's net profit of $6,400,000 was nearly triple that of 1945, and would have been higher but for above-normal depreciation. The company's common shares, which sold as low as $9.25 in 1945, got up to $154 in February, 1955; they were then split four-for-one, and now trade at close to $40.

Now another foreign-backed newcomer has arrived—Inland Cement Company. This firm is controlled by Sogemines Ltd., whose major shareholders, in turn, include a group of Belgian companies headed by the huge Societe Generale de Belgique.

Inland is now building a $7,000,000 plant on the outskirts of Edmonton, scheduled to go into operation with a capacity of 800,000 bbl. annually about a year from now. Inland's owners took a long, hard look at the market possibilities, and figured there is plenty of room for new capacity. So it will provide Canada Cement's first new competition in that area.

Canada Cement, however, has moved fast to strengthen its own position. It is building a grinding and shipping plant in Edmonton, designed for later conversion into a complete cement manufacturing plant. One aim of the grinding unit, which will presumably handle clinker brought in by rail from Exshaw, is to reduce cost. Much will depend on what sort of freight rate the company is able to get.

The Inland move should sharpen competition in the west. Inland also plans to make several premium type products, such as a special oil well cement.

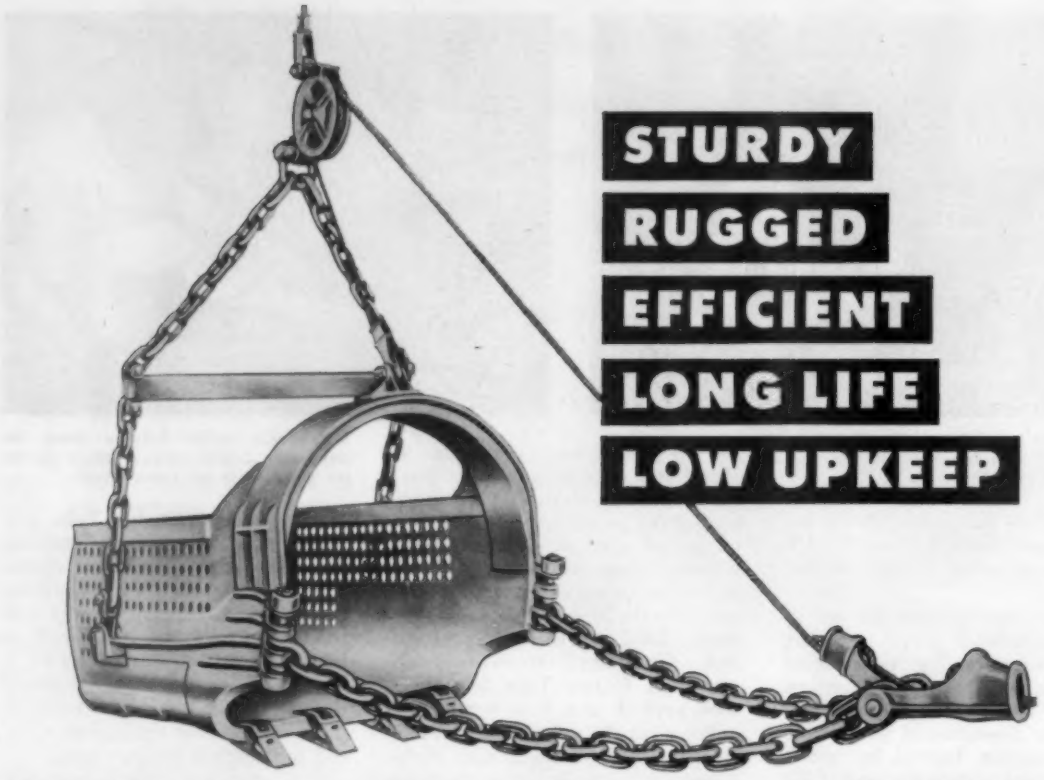
The Ontario situation centers around the Woodstock area, southwest of London, Ont., where there are extensive deposits of limestone. Canada Cement has ordered machinery for a 1,500,000-bbl. a year plant which will cost $12,000,000, due to be completed in 1956. The plant will be erected at Beachville, Ont.

Near Ingersoll, Ont., Associated Portland Cement Manufacturers Group of Britain, a huge organization, is drilling a 1,300-acre site, and officials are expected to announce soon whether the firm will build a plant, and if so, where. If Associated does build, output may be 2,000,000 bbl. a year, and the cost of the plant over $20,000,000.

At Clarkson, Ont., just outside Toronto, the St. Lawrence Cement Co., is going to build a $15,000,000 plant with a capacity of 1,500,000 bbl. a year which is slated to be in operation by April, 1957. The quarry site has not been announced. However, the company has options on several properties near the Woodstock-Ingersoll-Beachville area. One option is adjacent to Canada Cement holdings.

Is there room for three new plants in Ontario? One informed opinion thinks not—at least, not in the immediate future. If each group actually builds a plant, new capacity amounting to 5,000,000 bbl. a year would be added, or 70 percent of the present production in Ontario.

According to press reports, Mexico will ship 50,000 tons of cement to Argentina over a 10-month period in 1955.



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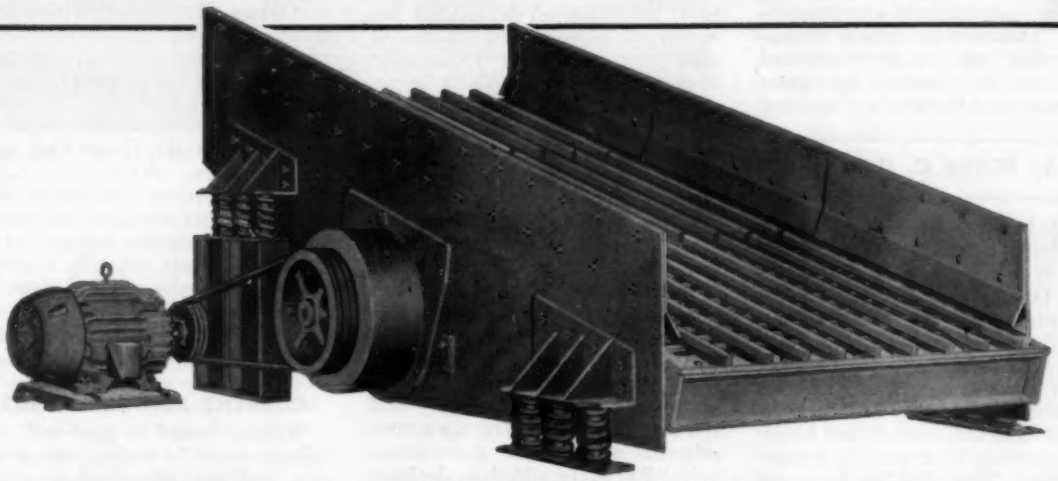

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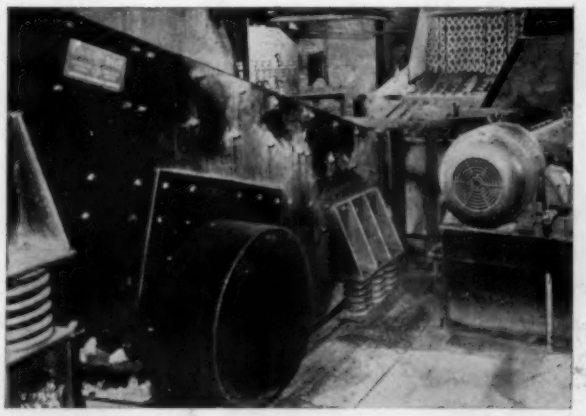

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Rehabilitation, Conservation Return Good Will, Profits to American Aggregates Corp.

another ON THE SPOT report

MORE than 25 years ago, at a time when companies engaged in surface mining were not faced with rehabilitation ordinances or mounting public reaction to abandoned spoil areas, the American Aggregates Corporation of Greenville, Ohio, had

By BUREN C. HEROD

already begun to furnish tangible evidence of its attitude toward the situation. Using the vision and foresight of F. D. Coppock, board chairman, as a point of departure, the company embarked on a long-range program of rehabilitation and reclamation which was soundly planned to give attention to previously worked areas and to mesh with current and future pit operations as a part of routine operating. That plan has been vigorously adhered to since its inception. It was based not only on the company's pride in its activities and on a desire to earn the good will of the communities in which it operates, but also on the fact that reclamation is a sound business practice.

Mr. Coppock, who is often referred to as the father of reclamation, assumed the responsibility of looking after the company's reclamation work. As he says, American Aggregates, after many years of operation, came in for its share of ridicule arising from unsightly areas of abandoned pits and spoil areas. Possessing the type of personality which will not permit such criticism to remain ignored, Mr. Coppock initiated the company's program. That he found himself faced with a sizable task is not surprising, in view of the far-flung operations of the company.

At 15 different plants, whose hourly tonnages range from 200 to 750 t.p.h., current excavations were, and still are, constantly using up a considerable acreage. Of the average yearly 250 acres added to depleted areas, about 200 represent exhaustion of gravel resulting from production of 10,000,000 tons per year—the balance is that left to protect highways and property lines. Fortunately, not all of the 250 acres per year added to those already depleted are subject to extensive reclamation. At most operations, the excavations are producing lake areas equal to about half of the yearly acreage total. This type of operating is carried out at all three Indiana plants; at Fort Jefferson, Dayton, Urbana, and Columbus, Ohio; and at the Green Oak and Oxford, Mich., plants.

While American Aggregates and other operators mentioned elsewhere have come to consider reclamation of worked-out areas not only a moral obligation but also a logical phase in the operating program, some segments of the industry have been derelict in this respect.

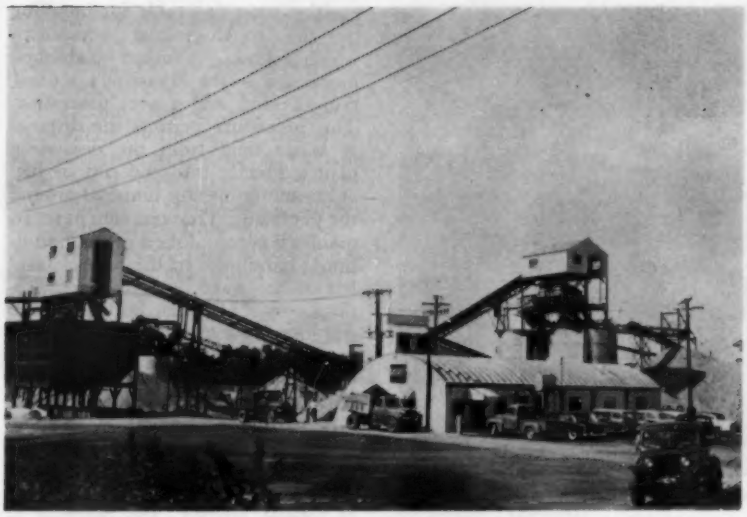
CURRENT ZONING TRENDS

Without regard to good will, the current trend in zoning ordinances and land restrictions is forcing the industry to reappraise its efforts in that direction in the cold light of future survival. Most operators in or near metropolitan areas are now aware of efforts to apply zoning regulations which would prohibit expansion or relocation of existing plants and would dictate locally "acceptable" operating methods.

Many producers have reported that in their areas restrictions have been established pertaining to depth of pit, set-back from roads, bank or slope rights, and water pollution. In some areas, particularly residential sections, pits cannot be carried below the street level. One operator has been made to limit diggings to 2 ft. above the water table, or to extend them at least 5 ft. below—for the prevention of stagnant water. In another instance ,permission to work a gravel site near a community was on the condition that topsoil and subsoil be saved, and payment of ¼ cent per ton sold be made to a village trust fund. This fund, which will approximate $40,000 upon exhaustion of the 20-year reserve, will be used to reclaim the pit site.

There is no protection in present

Trees and grass planted by the shores of the lakes lend an air of naturalness to the park.



Neat grounds and well-kept buildings characterize the north Indianapolis facility of American Aggregates.

zoning, which can be readily changed by an antagonistic community. In addition to new urban restrictions, the situation is further complicated by an increasing number of rural zoning regulations which threaten to cause difficulty in acquiring sites for future operations. Despite many unjustified complaints lodged against pit and plant operations, the industry is necessarily on the defensive with respect to hazardous conditions or unsightliness where and when they are allowed to continue.

Ironically, the industry is confronted with the increasingly important need for a public relations program — directed at communities which are most dependent upon its products. The very increase in highway and suburban construction is the factor which in recent years has brought so many gravel plants before a critical public eye.

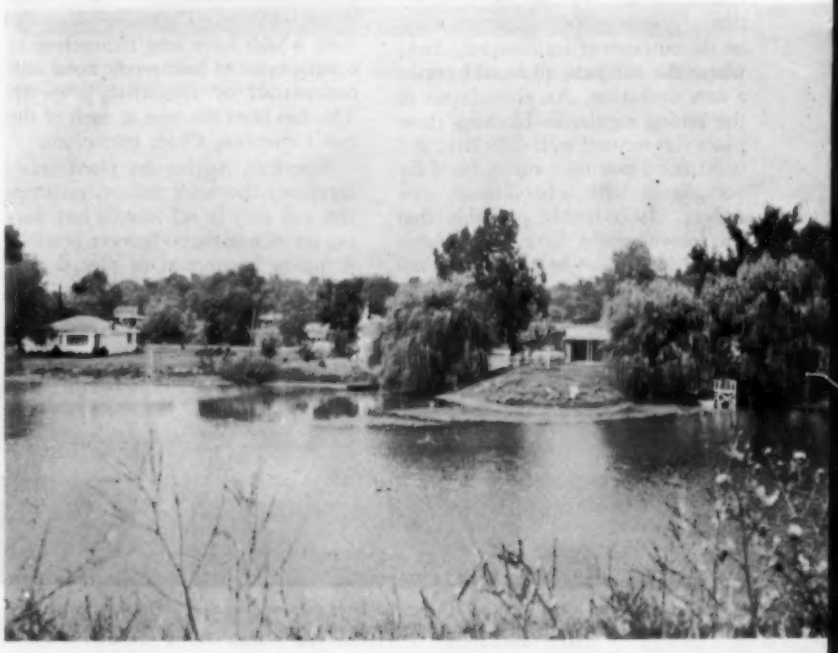
If the general public is not m.. ' aware of the status and value of the sand and gravel industry to the national and local economies, this industry may suffer further loss, such as that recently sustained by a western operator. In this in.. 'ance, after a 4½-yr. litigation over and condemnation with the Federal Government, the operator was awarded $125 per acre on the area condemned—substantially less than the value of contained gravel.

However, it goes without saying that, while the industry is vital to the nation, the individual operator is in no way absolved from responsibility for the conduct of his enterprise and the public reaction to it. For an example of what public opinion can effect, consider the situation of coal strip mining. In the Midwest, one can pass mile after mile of long-abandoned spoil piles on which no effort at reclamation has been made. Although considered inadequate, a law recently adopted in Ohio requires posting of a $200 per acre bond which guarantees at least $190 per acre for reclamation by strip miners. It has been predicted that unless these operators go along with a bill providing more adequate reclamation, the next step will be the demand for a law imposing a severance tax on each ton of coal mined, to be paid by the industry to the state of Ohio. If such a law is enacted, it will almost certainly be extended to all kinds of mining, including extraction of sand and gravel.

PROGRAM OF AMERICAN AGGREGATES

Since American Aggregates Corp. has pioneered within the field a program of reclamation and rehabilitation, its procedure and activities may be a guide to other operators contemplating such projects. In the case of this company the program has brought results ranging from parks and lakes to factory sites and commercial lots. At the Raymond Street plant in Indianapolis, currently at 400 t.p.h. operation, factory sites are being developed. At Dayton, Ohio, a 500 t.p.h. plant is working material from an area which will be finished off as a municipal reservoir. The operations in the south section of Columbus, Green Oak, and at Oxford, Ohio, where 500 t.p.h. are produced, have resulted in the formation of six small lakes nearly completed, and the beginning of two others. The 200-t.p.h. Fort Jefferson, Ohio, plant is now operating between Wayne Lakes Park—a 277-acre reclaimed area—and the Hills of Judea, an 80-acre tract in process of rehabilitation.

At Richmond, Ind., the plant, which is comparable to the Fort Jefferson setup, is drawing material



Private parties, who formed an association to purchase land at Wayne Lakes Park, have built 166 cottages and permanent homes.

It is difficult to realize that this attractive tract in Wayne Lakes Park was once part of extensive diggings.

from two wet pits, one of which will result in a lake approximately as large as the 35-acre one on the site of an older pit.

At Urbana, Ohio, and in the north section of Columbus, operations (in a 300- to 350-t.p.h. category) have also developed lakes in old digging areas. At the former, there are three lakes, in addition to a park area and trout stream. North Columbus has a sizable tract of commercial property bordering one side of a mile-long lake—the result of wet pit operations.

With depletion of deposits and rezoning forcing constant reappraisal of reserves, the company's management feels that acquisition of new property has a direct relationship to reclamation of the old. In point is the situation which developed a few years ago on the outskirts of Indianapolis, Ind., where the company planned to open a new operation. An amendment to the zoning regulation blocking these plans was secured with difficulty; and it included posting a surety bond for compliance with rehabilitation procedure. It is highly probable that this move would have been unsuccessful had it not been for the company's past reclamation record.

As practiced by American Aggregates, reclamation at each of its operations is related in general to local conditions. If a plant such as that on the south side of Indianapolis is situated in an area of expanding industrial development, worked-out areas are restored to conform with and add to existing commercial sites. In rural locations, recreational and nature areas are usually established. At Brighton, Mich., for example, the company is reviewing—with no obligation to do so—the possibility of planning operations and restoring pits in such a manner as to conform with the adjoining Huron Clinton Development District, a state park and conservation area of several thousand acres. There are also locations which have lent themselves to development of both scenic areas and commercial or industrial property. This has been the case at each of the two Columbus, Ohio, operations.

American Aggregates plant crews carry out the work toward reclamation not only in off-seasons but during pit extension. Wherever possible, stripping is overcast or placed in a position most favorable for handling by the rough-grading equipment which follows. Another established procedure is the company's separation of sand and gravel processing. This procedure permits the disposal of waste sand from the desanding plants directly into the pits in lieu of accumulating this material around the plant site. Thus one step in reclamation is accomplished without additional handling. In the case of lakes left in the wake of dredging operations, draglines and bulldozers are employed to level and grade adjacent spoil, and also to slope the banks to permit the use of power mowers. In only a few instances has it been necessary to hire equipment of carry-all and scraper types to accomplish the job. Along with contouring of filled areas and lake shores, replacement of topsoil, seeding, and planting of trees and shrubs are prime elements in the program.

Reserve gravel property also comes in for its share of attention. At several locations, the company utilizes virgin acreage as a nursery for thousands of seedlings which are later transplanted to reclaimed areas. Where feasible, land is leased to farmers until such sections are needed on pit advance.

FINANCIAL INDUCEMENTS

Although good public relations are undoubtedly a primary objective in the over-all American Aggregates reclamation program, the probability that the extra cost will be recovered on the disposition of reclaimed areas has not been ignored. In the experience of this company, the additional expense is nominal when the work is accomplished as a phase of routine operations, and the only materials needed, other than occasional loads of purchased topsoil, are the pit and plant waste, which require disposal in any event.

The company's entire purchase price of $120,000 for the 277 acres which it rehabilitated as Wayne Lakes Park, near Greenville, Ohio,

This attractive lake is the result of the careful foresight and planning of the firm. It was formerly a wet pit site at Richmond.

Fish hatcheries keep the lakes at the Hills of Judea recreation center well stocked with motivation for anglers.

has been fully recovered through the sale of only half of the lots in the park. Similarly, at the property in the north section of Columbus the sale of only half of the available commercial sites along the boundary at $125 per front foot has more than recovered the original cost of the entire holding. In every case of disposition of reclaimed land, the company has realized not only recovery of reclamation expense, but a return in excess of original land cost.

INDIVIDUAL PLANT PROGRAMS

North Indianapolis During the construction of the new Templeton plant in the north part of Indianapolis it was necessary to place 15 ft. of fill along a road on the property line. As soon as this had been done, than the local crew set in a long row of honeysuckles. With this grade established on the boundary, the desanding plant now flumes its fines to the previously dredged area of a lake, to be used as fill which will require very little additional handling at final restoration of the surface. A similar situation exists in the area to which the plant on the south side of Indianapolis expanded a few years ago. Again, from a desander located adjacent to the dredging area, waste sand flows back to become fill. With further filling and leveling, several more acres will be available as a factory site, in addition to those already sold to the industries in this area.

Richmond The Richmond, Ind., pits are east of town and north of U.S. route 40—well back from public view. Nevertheless, restoration of earlier excavations has not been ignored. A north-south lake, approximately 35 acres in area, has been established in an old wet-pit site. While walking along the shoreline, one quickly gets the impression of the quiet isolation of a natural area. Only the occasional passage of the haulage train at the south end, and fleeting glimpses of the dragline boom tip over a rise give indication of man's presence.

Transplanting of small evergreens from a nursery area containing more than 10,000 seedlings is still in progress on the sloped banks and leveled spoil. Near the southwest corner of the lake a 16-in. river water inlet was placed; and at the opposite end, about 1,600 ft. from the inlet, a weir was installed permitting regulation of water depth. The only equipment needed for this project was a small dragline and a bulldozer. In common with other operations of the

One of two lakes at a former operating area which has been set up as a recreation spot for the company's employees

This straight channel was cut to eliminate a meandering loop of the Mad River which had been inundating the enclosed land.

Some of the ire of the Mad River will be pacified by a flood control program which will change this wet pit site into a reservoir at the firm's Dayton plant.

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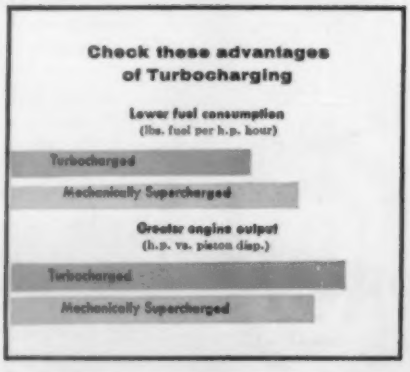

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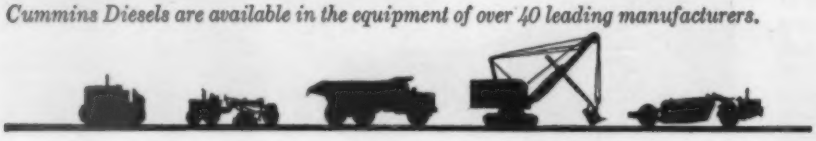

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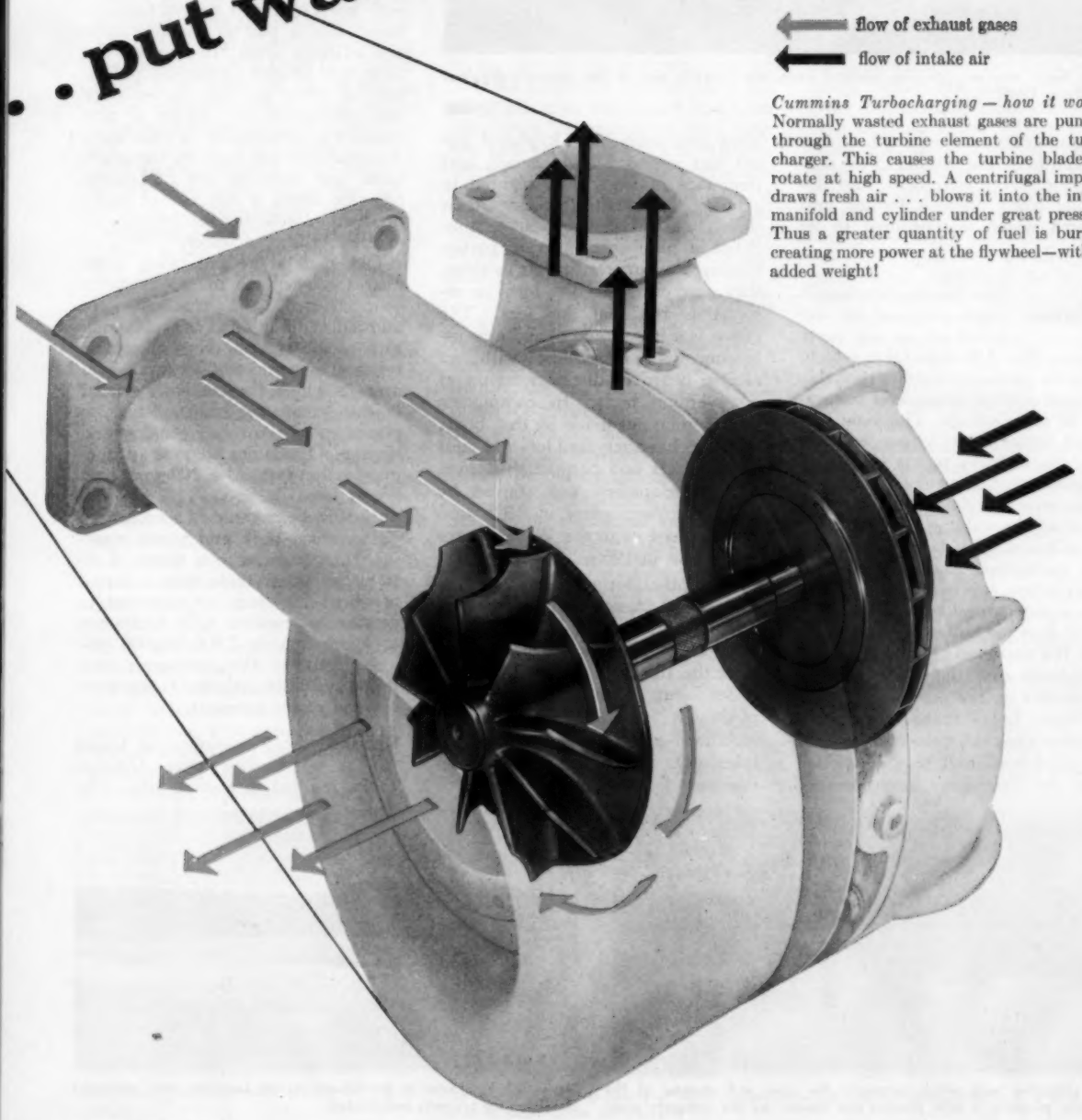
. . put waste heat to work!



Cummins Turbocharging — how it works. Normally wasted exhaust gases are pumped through the turbine element of the turbocharger. This causes the turbine blades to rotate at high speed. A centrifugal impeller draws fresh air . . . blows it into the intake manifold and cylinder under great pressure. Thus a greater quantity of fuel is burned, creating more power at the flywheel—with no added weight!

Muzzy Beach, now an appealing pastoral scene, was formerly part of the concern's diggings at Urbana, Ohio.

company, current stripping has been laid in a long row parallel to the digging, for easy replacement; and desanding plant waste is flumed into an area which is scheduled to be filled.

Fort Jefferson The company's rehabilitation program was initiated on an old property near Fort Jefferson, Ohio, which, up to the present, furnishes probably the most striking example of restoration of old diggings. The view presented immediately to one entering from the highway makes it difficult to believe that this was once an area of extensive workings. Further progress along the winding ridge road and by willow-shaded lake shores further strengthens such an outlook. Nevertheless, this beautiful "nature" area is not natural but man-made—and it does not suffer by comparison with the surrounding countryside.

Eighteen small lakes are included in an area of 277 acres now known as Wayne Lakes Park. Original excavation along the numerous stringers of gravel lent itself to the development of rambling interconnected lakes and peninsulas. Replaced top soil was seeded with bluegrass, and thousands of trees were planted to achieve the beautiful scenic areas shown in accompanying photographs. When a number of private parties displayed an interest in this location, they were encouraged to form an association and buy the area. The group was incorporated, and a membership was established with an elected board of directors set up as a governing body. In compliance with regulations made by that body, members have acquired lots and built 166 cottages and permanent homes. This development was started by American Aggregates in 1925 and was disposed of to the Wayne Lakes association in 1950.

In another former operating area near Fort Jefferson the company has established a recreation spot for its own use. The former landowner gave the tract the name of Hills of Judea, and the biblical description of those hills is still adaptable to this reclaimed area of ridge-surrounded lakes. On approximately 80 acres one now finds a large park area, a beach, a clubhouse, and two lakes stocked with fish from hatcheries on the property. The clubhouse was built largely with timber felled at the site. The lake area is being currently landscaped almost to the north end of the tract, where present operations are in progress.

Dayton A few years ago the company acquired a going plant at Dayton, Ohio. Almost immediately it set out to remedy for itself and adjoining property owners the problem of flood control in this area. The Mad River originally made a northward loop through the property, and during some seasonal high levels would go over its banks—inundating a part of the operation and adjacent areas. In co-operation with the Miami Conservancy District of Ohio, the loop in the river was eliminated by cutting a new channel approximately ½ mile long. A wide levee was built on the south bank, and here the city of Dayton has put down a number of high-production wells for the recovery of excellently filtered water.

Old spoil areas and plant waste near the entrance to the property were leveled, and truckers were allowed to dump fill in the remaining area of the old pit. No undesirable refuse was permitted, however. The area in which the company started its own excavating has spoil piles so placed as to allow easy grading and sloping. Operations are now advancing to the east in a 200-acre area leased from the city. This site will ultimately be restored as a municipal conservation park and water reservoir. Excavations to a depth of 40 ft. below water table over a period of about 30 years are expected to produce a reservoir with a capacity of approximately 2,500,000,000 gallons. Part of the company's own property will be included at the western end of the reservoir.

Urbana Past operations on leased property near Urbana, Ohio, resulted in a small lake. The

An attractive park which surrounds the lakes and streams at the Urbana property is kept planted and seeded by the company crew.

Eleven fish hatcheries at the Urbana facility keep the lakes and trout stream on the property well stocked.

One of the levees which surround four lakes formed by the firm's operations at south Columbus. They were built concurrently with excavating.

surroundings were landscaped and the area was transformed into a recreation park and beach now operated by the former lessor. Developments to date on company property include a park area and three lakes covering approximately 150 acres to a depth of 20 ft. or more. A fourth lake is being enlarged at the rate of nearly 10 acres per year by current excavating. Planting and seeding of the park and shoreline is being handled by the plant crew, which also constructed 11 fish hatchery ponds and established a trout stream. The latter follows a winding course of about a mile through the park. The spring-fed lakes have weirs at interconnecting points permitting depth control.

Columbus Operations In 1926 American Aggregates started the rehabilitation of dredged areas at the Welch Avenue plant in the south part of Columbus, Ohio. By 1940 work was near completion on the northern two of the present four lakes. All are fed by ground water and cover an area of approximately 350 acres. Surrounding levees were built, sloped, and seeded concurrently with pit operations. They were built to a height of 60-70 ft. above the nearby Scioto River and are from 200 to 250 ft. wide at the base.

While both company-owned and hired equipment was used in levee construction, it was found that this type of work could be more rapidly accomplished with hired carry-all earthmovers. Not only do these levees preclude flooding of company property by the Scioto River, but they also protect the adjacent areas of the south section of Columbus. The four lakes are actually the result of quartering the water area by north-south and east-west levees. The former carries the haulage track between the plant and digging site, while the latter carries an east-west county highway across the property. Three of the lakes are stocked with fish and used by a company fishing club. The fourth furnishes wash water for the plant.

Last year about 8,000 seedlings—mostly evergreen varieties — were planted in the landscaped section, and there are approximately 2,000 more in a nursery area. Unused land on the fringes of the property and in the area of future expansion is let to truck gardeners. Just north of the plant site is an area which had been filled over the years with fines from the processing plant. This fill was leveled, and that part of the property was sold to a light manufacturing company. Additional acreage now receiving waste will soon be available as reclaimed land for further industrial construction.

The entire property, from the fill area north of the plant to the south boundary of the two southern lakes, is a neat, well-ordered layout. Considering the fact that one has to pass through a thoroughly run-down commercial area on one approach to the property, the striking contrast presented by the rehabilitated areas of the company's operation should create a little uneasiness among those so concerned over unsightly locations.

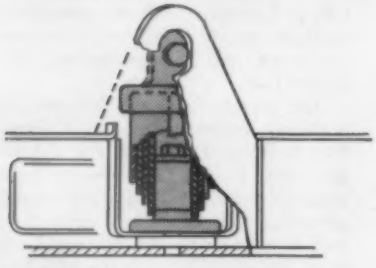
At the Grandview Avenue plant in the north part of Columbus, wet-pit operations to the present time have left a lake area of more than 150 acres. When the deposit is fully depleted, the water area, which lies between the Scioto River on the south and west and Dublin Rd. to the north, will measure approximately a mile in length with an average width of 2,000 ft.—more than 300 acres.

Digging was not done closer than 300 ft. south of Dublin Rd., leaving that much protection for the highway. The company then let a contract for top soiling and seeding of this valuable strip of land along its boundary. Although management has no desire to enter the real estate field, it considered the possible ramifications of indiscriminate disposal of lots on this strip. Therefore, some of the commercially-zoned front footage along Dublin Rd. has been sold to light industry and other commercial organizations whose construction plans must be submitted to the company for approval. Consideration is given to architecture, external appearance (buildings must have finished masonry), and location. All structures must be separated by at least 100 ft., and must be set back from the highway not less than 70 ft. Such care is taken for the purpose of keeping the bullding construction in harmony with this attractive location, which fronts on a six-lane boulevard, and has a mile-long lake in the rear.

The present lake area is leased to a private organization—the Columbus Builders Exchange for fishing purposes. Unassailable sources have reported recovery of a phenomenal poundage (and footage) of walleye and bass. During the off seasons a levee was built between the lake and the Scioto River with strippings which were set aside for this purpose

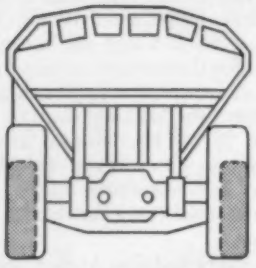
The center area of property at north Columbus which will be removed to form a single long lake. A small island will remain.

Check all these important Dumptor®



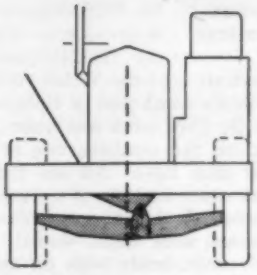
Smooth ride

Heavy, snubber-type spring is mounted between Dumptor main frame and the steering axle. Shock-absorbing action gives plenty of "cushion", takes jolts out of rough, off-road travel. Easy on operator and machine.



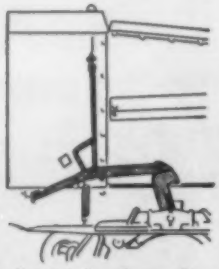
Tires track in direct line

Wider, heavier steering axle puts Dumptor steering wheels in direct line with big drive wheels. Tires track in the same path. There's less rolling resistance — better traction in soft ground and over rough haul roads.



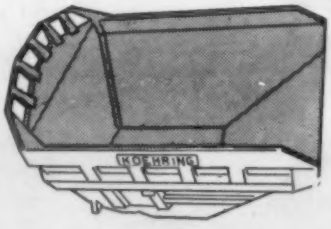
Off-set pivot on axle

Pivot point on steering axle is offset from center line 3¼" toward operator side of machine. There's no sag, even with unbalanced load. Steering axle oscillates 21°, keeps twisting strains out of main frame.



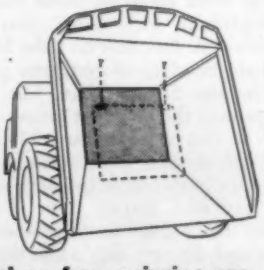
New body-latch, dump lever

Body latch for 1-second gravity dumping is simple, trouble-free. Latch is engaged by a single hook, mounted on the chassis frame. Dump lever is located inside the cab, in an easy-reach position at the operator's left.



Streamlined, all-steel body

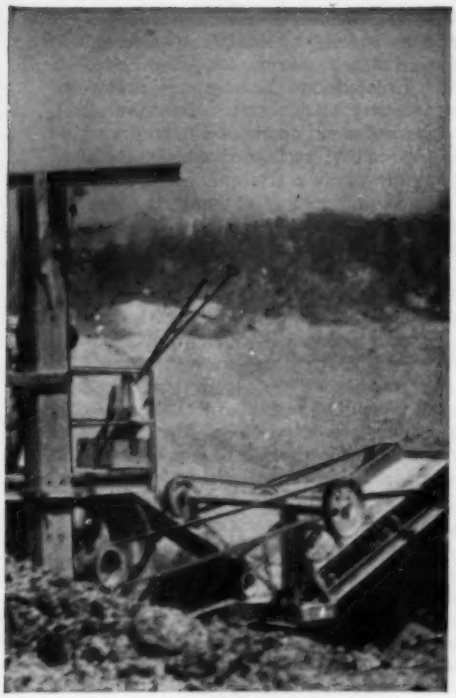
Inside is free of bulges or ledges. Top edge is box-beam constructed. Sides, ends are ribbed with 5 and 8" channels. Double-plate bottom is lined with multiple steel beams. Note ridge bar added to rock-guard teeth.



Bolted or free-swinging pan

Heavy steel kick-out pan is ½" thick. Pan can be bolted to body floor for extra protection when loading rock. Remove bolts, and pan has free swinging kick-out action, breaks suction when dumping sticky loads.

CK439



advantages

Take another look at the latest-model Koehring 6-yard Dumptor shown here. It has some important features worth checking . . .

Notice how heavy snubber-spring on steering axle cushions road shocks, yet retains Dumptor's unique advantage of no spring maintenance. There are no leaf springs. Big shock absorbing drive tires eliminate need for springs on drive axle. Alignment of drive wheels with steering wheels adds to efficiency of no-turn shuttle hauling — another basic Dumptor advantage.

Instant gravity-dumping is controlled by simple body latch and new dump lever arrangement. Notice, too, the new streamlined all-steel body. Even with all this heavy-duty strength, Dumptor still has more than 6 h.p. for every ton of loaded weight — accelerates fast, climbs 24% grades fully loaded. See your Koehring distributor for more facts.

KOEHRING COMPANY

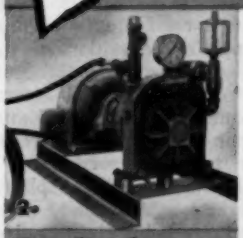
Milwaukee 16, Wisconsin

Subsidiaries:
JOHNSON • PARSONS
KWIK-MIX

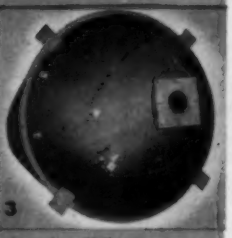
HAVE YOU OVERLOOKED ANY OF THESE IDEAS?

There are places in your batching and mix plants where these low-cost Johnson accessories can profitably increase efficiency on the storage and batching of aggregates and cement . . .

1 **Pivoted Distributor** feeds aggregates into multiple section bins. It turns and locks into position by ground-level control.

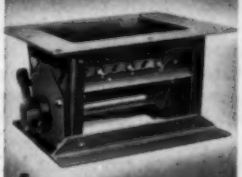


2 **Rotary Vane Compressor** supplies 7 cu. ft. of air pressure per minute to aerate cement silos and bins. Has 15-pound limit-relief valve.



3 **Aeration Fittings** properly spaced in storage silos and tanks keep built cement fluid and free-flowing at all times.

4 **Bin Gauges and Signals** accurately register "hi-lo" levels of aggregates or cement. They are dust-proof . . . operation is automatic.



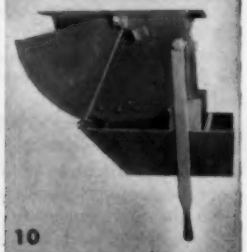
5 **Rotary Plug Valve** controls flow of cement from silos into screw conveyors. It's also used as a fill valve in cement batchers.

6 **Aggregate Fill Valves** single-clam, radial-type, have choker weights for jam-proof closing with large aggregates. Hydraulic pressure lub.

7 **Receiving Hoppers** all sizes, types for box-car, hopper-bottom car, truck, or bag delivery of cement. All-welded, weather-tight.

8 **Elevator Buckets, Chains** 2 types, 7 sizes of buckets for aggregates and cement. Long-life steel chain has carburized knuckles.

9 **2-Way Elevator Discharge Valve** is a flop-type chute which directs flow of cement from elevator into bin storage tank, or silo.



10 **Tunnel Gate** a single radial clam gate for stockpile reclamation. Skirt board is hinged, opens and locks in any position.

11 **Chain Sprockets** 19-tooth chilled-rim cast iron with heavy split hub and double-rim lugs. Also, 12-tooth cast-chrome manganese.

Mail to: C. S. JOHNSON CO. CHAMPAIGN, ILL. (Koehring Subsidiary)

Send us details on items checked: 1 2 3 4 5 6 7 8 9 10 11

NAME _____

TITLE _____

COMPANY _____

DIVISION _____

STREET _____

CITY, STATE _____

Z1

during operating periods. This levee is seeded, and along with all the reclaimed area, it is maintained by weeding, mowing, and additional seeding if necessary.

An area of undesirable material found in the deposit near the center of the lake will be left to form an island and leveled to a height of 3 ft. above lake level. Undesirable sizes and waste produced in the plant are sold as fill and will not be left to detract from the scenic appearance of the area.

Green Oak Although the Green Oak., Mich, operation is much "younger" than others within the company, reclamation steps have already been taken around the 45-acre lake at the original dredging site. This project is still under way; a dragline is currently leveling the spoil area. As mentioned earlier, the long-range rehabilitation program for this property is being viewed in the light of conformity with the adjoining conservation and recreation area being developed by the Michigan Conservation Department.

Oxford The Oxford Chamber of Commerce "extends sincere thanks — for foresightedness in removing an eyesore." Such was the published expression of appreciation for the job done by American Aggregates on depleted property at Oxford, Mich. During the World War II years, the company had acquired a former sand and gravel operation in this vicinity. In July, 1950, a crew returned to the property and started reclamation. Crescent Lake — with 15,000 ft. of shoreline, about 125 acres of water area, and surrounded by 300 landscaped acres—was the result.

Using a dragline, 'dozer, and carryall, the crew leveled old spoil banks and sloped them to conform to surrounding topography. Dissatisfaction with the first appearance resulted in re-forming a part of the shoreline. The problem of insufficient topsoil was met by hauling more of this material from a part of the present workings to the Crescent Lake site. The 500-acre tract has been so well restored that a number of people have expressed a desire to build homes there, and the company is giving consideration to possible subdivision of the property. Considering the fact that this rehabilitation was accomplished before enactment of the present township ordinance requiring protective barriers, bank sloping, etc., there is ample justification for public recognition of the company's efforts.

Certain of the present pit operations are conducted in a leased area where, again with subsequnt reclamation in the plans, overburden is bulldozed or cast so it can be replaced with the most effectiveness. Consideration is now being given to placing a dredge in this location. If this is done, dredging will be handled in such a way as to protect a small adjoining natural lake by leaving an isthmus approximately 250 ft. wide and 6 to 8 ft. high between it and the dredging area.

Unexcavated reserve property at Oxford is accorded the same attention as elsewhere in the three-state operations of the company. Not only is such land put to crops, but it is rejuvenated and fertilized by adding plant food—about 300 lb. per acre. A sizable area was also set aside as a nursery in which the local crew last year planted approximately 40,000 seedlings.

EXPENSE VS. RESULTS

The company's program and its results do not indicate that reclamation work automatically surrounds an operation with a rosy aura. American Aggregates has recently been forced to represent its position at a public zoning hearing at one of its locations. Upon this occasion management took and takes issue with what it considers capricious and unconstitutional regulations directed solely at the firm.

In addition, the company's management readily states that not all worked-over areas and abandoned pits can be reclaimed economically. While many tracts can be rehabilitated and sold at a figure in excess of the expense involved, some are in locations where the ultimate value would be far less than the necessary cost of restoration. However, in Mr. Coppock's words, "Unless we as operators reduce the objections to our operations by doing proper reclamation work, we can expect to be zoned out of the most desirable locations which are adjacent to the thickly populated centers. If we cannot operate within or near these populated areas, then the added cost of making our deliveries to the point of use will greatly exceed what it would have cost us to rehabilitate the areas closer to the market."

ACTIVITIES OF OTHER OPERATORS

While the foregoing activities may appear to have involved formidable effort on the part of American Aggregates Corporation, it becomes apparent that at any given location within this company's operations the basic features of a reasonable reclamation and rehabilitation project are not beyond the resources and capabilities of many other operators in the industry.

The Lyle J. Walker Sand and Gravel of Detroit, Mich., is an operation in point. This organization, which produces more than 350,000 cu. yd. annually, is presently working two pits—one at Rochester, Mich., and the other at New Hudson, Mich. Almost immediately after opening a new pit, land grading is started. Therefore only the first part of the top soil removed requires storage, and this is used in the final restoration of the surface. A former operating

A view of Crescent Lake before American Aggregates began reclamation work.

Crescent Lake and the surrounding land after the transformation wrought by the company's work.

site near New Hudson produced two lakes.. One of these, approximately 10 acres in size, has an island which was made by dumping overburden. The remainder of the area, in common with other former digging sites, has been restored as farmland or pasturage.

A king-sized problem in overburden handling is currently facing the Marquette Cement Manufacturing Company at its two quarries near Oglesby, Ill. The company has to dispose of approximately 2,000,000 cu. yd. of material yearly from overburden which is sometimes 120 ft. in depth. Disposition is made in exhausted sections of the limestone quarries in such a way as to improve the appearance, after careful planing of an economical haul from stripper to disposal point.

The problem of plant wash water, which commonly arises as a factor in stream pollution, was solved by the New Enterprise Stone and Lime Company, Inc., of Ashcom, Pa. In fact, the trend toward tight legislation in that state concerning anti-stream pollution focused this company's attention on the problem. Into a system originally designed to wash 60 t.p.h. but speeded up to 75 t.p.h. of clay-contaminated crushed limestone, water is pumped from a creek on the property at the rate of 10,000 g.p.h. With such a thorough washing, it was inevitable that discharging the water back into the creek would result in contamination. By installing a two-stage system consisting of a hydro-classifier and a thickener, the company has been able to recover as much as 100 tons of salable minus ⅛-in. material in the wash water, and simultaneously to eliminate stream pollution.

In 1947 and 1948 Terry Carpenter of Scottsbluff, Nebr., proved that it pays to exploit the unusable areas of a commercial deposit. On an 80-acre tract containing about enough material for 5 to 6 years of operation, sand and gravel production was started from an old plant which had been previously operated there. It was found that the deposit, located in a low area, contained 30 percent waste fines and numerous clay pockets. Using a hydraulic dredge, a pond 50-ft. deep was developed, and the waste sand and clay were pumped to fill in all low spots. This economical leveling resulted in valuable industrial property, and the dredge pond is a part of a recreation site.

A very effective public relations project and local community improvement was recently completed through the co-operation of Basic Refractories, Inc., and the town of Bettsville, Ohio. A long-abandoned Basic quarry, despite possible danger, had been frequently used by local young gentry as "the ol' swimmin' hole". Company officials decided to lease to the community, at a nominal figure, the 40 acres containing the 9-acre quarry lake, provided that Bettsville would meet safety and health regulations.

The offer was eagerly accepted by the townspeople—many of whom are company employees. With blasting tools, bulldozers, compressors, concrete mixers, all loaned by Basic, they began grading the quarry wall; and a recreation beach and park were well along within three weeks. Since that time the company and the town have joined to install dressing rooms, ball diamonds, picnic areas, playground equipment, and a shelter house. Intensive landscaping was also carried out in establishing the 31-acre park.

"IT TOLLS FOR THEE"

American Aggregates Corp., along with these operators and others, has made substantial progress in the reclamation and rehabilitation of their properties. They have carried the ball for a large part of the industry in establishing or building good will. However, those who for reasons known only to themselves have chosen to ignore public reaction need not ask "For whom does the bell toll?"—They will soon be aware.

Conrad M. Kelley Joins N.L.A. As Lime Stabilization Adviser

The National Lime Association recently announced that Conrad M. Kelley has been employed in its organization. Mr. Kelley will be engaged in providing technical service and information to highway engineers with respect to lime stabilization of road bases and sub-bases.

With a 24-year background, civilian and military, as a highway engineer, Mr. Kelley is well qualified for his present assignment, which will bring the association into this field of lime application for the first time.

Conrad M. Kelley

Mr. Kelley plans to make his headquarters at Garland, Texas.

Salisbury Portland Cement Building 120,000-Ton Plant

At Salisbury, Southern Rhodesia, the Salisbury Portland Cement Company, Ltd., is preparing to construct a 120,000-ton dry-process cement plant. Plant design is in the drawingboard stage, but employees' housing, a sewerage system, and water works have already been started. Bids for construction of the main structures will be taken soon.

Salisbury Portland Cement Company is sponsored by the Associated Portland Cement Manufacturers, Ltd., of London, England.

New Installations Dedicated At N.J. Crushed Rock Plant

A large crowd of guests attended the opening of the new facilities of Somerset Crushed Stone Company, Inc., Bernardsville, N. J., on August 6. Speakers at the event included Carl Holderman, commissioner of labor and industry. Luncheon was served the guests and refreshments were offered during the afternoon.

Anthony Ferrante, owner of the concern, stated that the new installation will increase production 7,200 tons per day.

Marquette Cement Plant Wins Natl. Safety Council Award

The National Safety Council has announced that the Cowan, Tenn., plant of Marquette Cement Manufacturing Company has been presented the Council's Award of Merit for its excellent safety record.

The award is presented only when an establishment's record satisfies rigid requirements laid down in the Council's Award Plan for Recognizing Good Industrial Safety Records.

Ned H. Dearborn, president of the National Safety Council, in a letter of congratulation to James H. Hawkins, Cowan plant superintendent, explained that the Marquette plant and quarry qualified for the award because of its injury-free period of 1,106,805 man-hours from February 2, 1951, to July 25, 1955.

Bernardsville, N. J., Takes Pride in Growth and Versatility of SOMERSET CRUSHED STONE

WHEN Anthony Ferrante purchased the former Somerset Crushing Company of Bernardsville, N. J., in 1945, he took over a 300-ton-per-day operation. Subsequent expansion was culminated in August of this year with the completion of an addition to the old plant, involving over a quarter of a million dollars—a fitting backdrop to the celebration of the tenth anniversary of the present company, Somerset Crushed Stone, Inc. A native of Bernardsville, Mr. Ferrante has developed his home town's only industry into a 7,200-ton-per-day enterprise. This was done by retaining the original crushing and screening buildings and constructing ahead of them a new primary and secondary crushing department with an additional screening section to give adequate sizing and storage capacity.

"Tony" Ferrante entered the contracting business in the early twenties. He was a local contractor when he bought the operation in 1945. The completion of the new plant addition, along with his record of considerable activity in civic and charitable affairs, occasioned the attendance of more than a thousand of his fellow townspeople at a reception held at the quarry. A special supplement of the local newspaper was devoted exclusively to the man, his organization, and their relationship to the community.

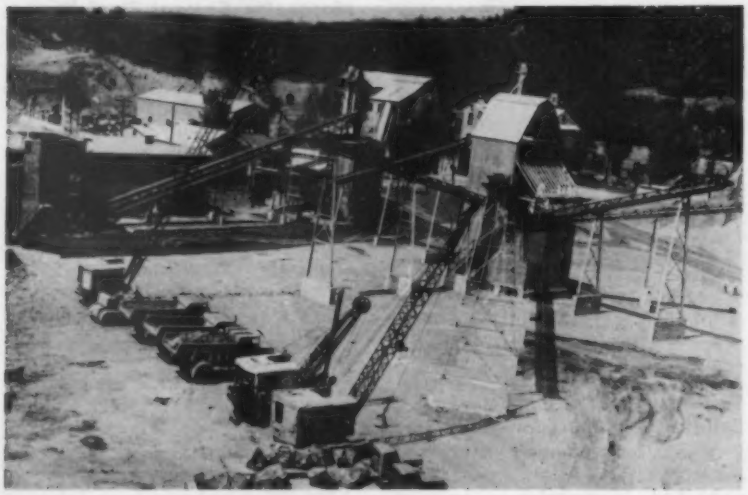
The fact that Mr. Ferrante and his company are highly regarded is best summed up by a passage from an editorial in that issue: "We are aware of the fact that industry in a residential town can be a mixed blessing, but we are also keenly aware that Tony, as most folks call him, knows this only too well. We are glad that he is not only a keen businessman but a civic-minded citizen as well. It would be far easier for an outsider to come into our community and exploit the quarry without regard for his neighbors. Tony Ferrante knows the community and operates his business with utmost regard for the rest of Bernardsville."

It was not an Aladdin's lamp which increased the production from this quarry by almost 7,000 t.p.d. over its more modest past record. Output of the former operation was relatively low due to the lack of equipment. Stone which had passed through the primary crusher was placed in stockpiles. If smaller sizes were ordered, it was necessary to stop the raw feed to the crusher from the quarry, and to refeed the stockpiled material to the crusher. As an initial step, Mr. Ferrante eliminated this double handling by the expedient of installing in the plant a Kennedy 37½ gyratory crusher and two new vibrating screens. Almost immediately production was increased from 300 to 900 tons per day.

During the years following that first improvement, additional secondary and fine crushing equipment was installed, screening capacity was increased, old conveyors were enlarged and speeded up, and new conveyors added. The result of these improvements was an increase in daily output of 2,300 tons for a new capacity of 3,200 tons per day. In 1954 the old plant turned out a total of 491,-253 tons in approximately 200 working days. The present high production since installation of the new addition is based upon a division of raw feed between the old plant—now known as "A" and "B" buildings—and the new section. The present output of 7,200 tons per day reflects an almost doubled capacity from what in effect is a dual operation.

Under the impetus of the Federal Government's proposed 10-year $101,000,000,000 highway construction program, the company began to plan its recent addition. Plans and specifications were drawn up and submitted to both the State Department of Labor and Industry, and the Borough of Bernardsville for their approval. Once the program was off the drawing board and approved, critical co-ordination had to be set up which would allow construction to proceed without a significant loss in production. Within three months the expanded operation was ready.

The quarry, which now includes 150 acres and contains sufficient reserves for many years of operation at the present rate of production, was originally opened on a 12-acre tract and used by local landowners solely as a source of stone for roads on their



An overall view of the Somerset Crushed Stone plant site. The new sizing tower is in the foreground.

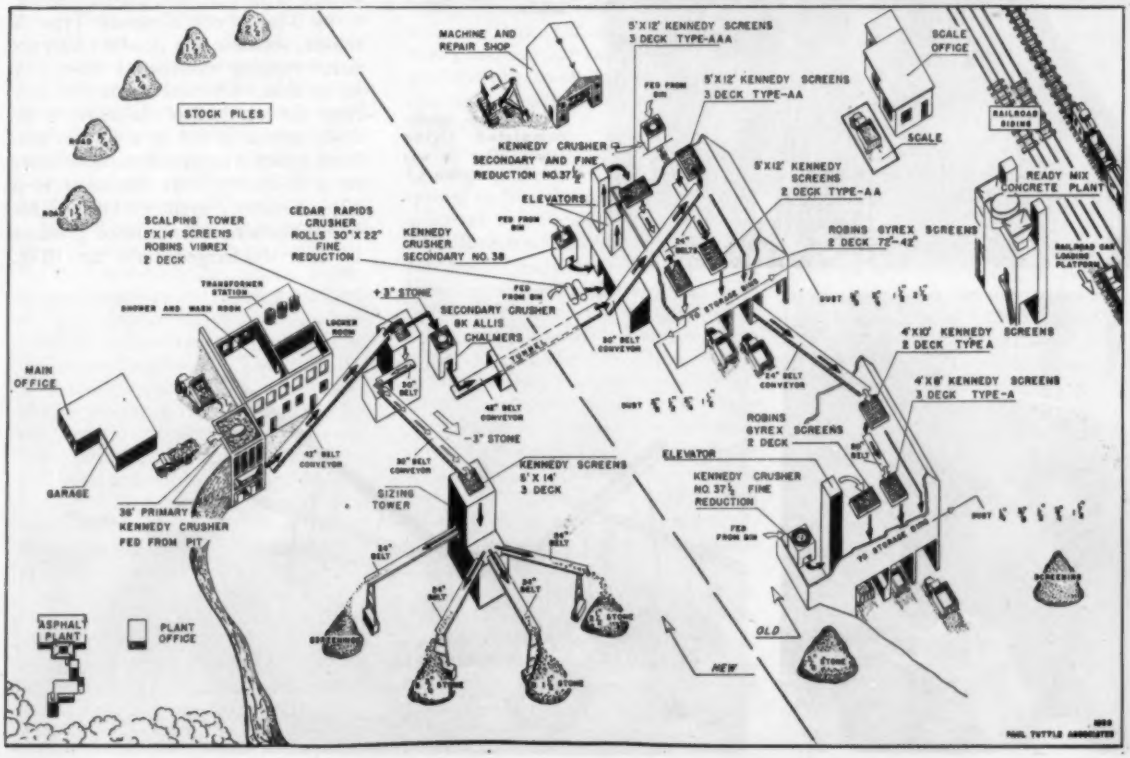
private properties. There are two types of material available in this deposit, one of which is unique in the area. An upper layer of fractured, laminated stone, between 5 and 40 ft. in thickness, is readily extracted without blasting and is loaded by power shovel directly into trucks for shipment. Known as "quarry strippings", this 3- to ¼-in. material has been approved by the state highway department as a sub-base on primary highways. As a result thousands of tons have been sold for that purpose and for the vast network of streets in many large-scale housing developments in this part of the state. An overburden of only 1 to 3 ft. is found above this rock, which is recovered by a 2-cu. yd. Osgood dragline.

Immediately below the "strippings" layer is a solid formation of trap rock. The working face on this material ranges from 60 to 120 ft. in height, with an average of about 85 ft. Blasthole drilling is done at present by the Dale-Frenken Drilling Company of Denville, N. J. The rotary drill used by this firm sinks a hole at the rate of 15 ft. per hour. Blasting is carried out in accordance with regulations of the state Bureau of Engineering and Safety under the supervision of the Hercules Powder Company. Three Worthington wagon drills and two Schramm 315 compressors are used for secondary drilling. Reduction of large blocks at the face is accomplished with a Northwest 37-B crane with a 50-ft. boom, and a 4,000-lb. manganese-steel ball made by the Frederick Iron Company.

Blasted material is loaded into 22-ton Euclids by three shovels—a 2½-cu. yd. 3500 Manitowoc, a 2-cu. yd. Osgood, and a 2-cu. yd. 820 Lorain. The five rear-dump trucks deliver their loads at a 250-ton surge bin which feeds the 36-in. Kennedy-Van Saun gyratory primary crusher. The latter is set to a 12-in. opening and is driven by a 200-hp. Crocker-Wheeler electric motor. This primary crusher product is discharged onto a 42-in. by 162-ft. Hewitt-Robins conveyor which can carry 1,500 t.p.h. Power is supplied through a Falk gear reduced from a 75-hp. Crocker-

A part of the crowd attending the recent Somerset open house. "Tony" Ferrante is at the center.

Below: The diagonal broken line through this 3-dimensional flow diagram shows the separation of the new and the older facilities.



Wheeler motor. The conveyor rises to the top of the 40-ft. scalping tower of the new section and there discharges over a 5- by 14-ft. 2-deck Robins Vibrex scalping screen.

Top-deck oversizes of minus 12-in. plus 6-in. stone is scalped to an Allis-Chalmers 8K gyratory secondary crusher which has a 6-in. setting. The minus 6-in. plus 3-in. material retained on the bottom deck by-passes the secondary crusher and drops directly onto a 42-in. by 70-ft. Hewitt-Robins conveyor which carries both this and the secondary crusher product through a 70-ft. tunnel. From this conveyor, the rock is discharged onto another—a 30-in. by 90-ft. unit—that runs up to the top of the "B" building of the older plant.

The minus 3-in. material passing the bottom deck of the scalper is discharged onto a 30-in. by 40-ft. conveyor and carried out of the scalping tower. It is then transferred to a 30-in. by 125-ft. belt and transported to the top of the new sizing tower—the second major component of the recent addition.

Thus the scalping tower accomplishes the previously mentioned division of raw feed between the older plant and the new addition by routing the 3- to 6-in. rock to the former, and the minus 3-in. sizes to the new sizing tower.

At the latter point, a 5- by 14-ft. Kennedy-Van Saun 3-deck vibrating screen separates the raw material into four sizes—2½-in., 1½-in., ¾-in., and screenings. These are then conveyed on individual 24-in. belts of 178-ft., 90-ft., 138-ft., and 90-ft. lengths, respectively, which issue from the sizing tower and discharge on surrounding stockpiles.

Stone conveyed to "B" building from the scalping tower is fed to a 5- by 12-ft. type AA Kennedy-Van Saun 3-deck vibrating screen. Plus 3-in. rock is scalped to a 60-ton tailings bin. Sizes retained on the middle and bottom decks—2½ in. and 1½ in.—are dropped into two other 60-ton bins. Bottom deck throughs (minus 1½ in.) are further screened into three sizes of minus ¾ in. and placed in bins.

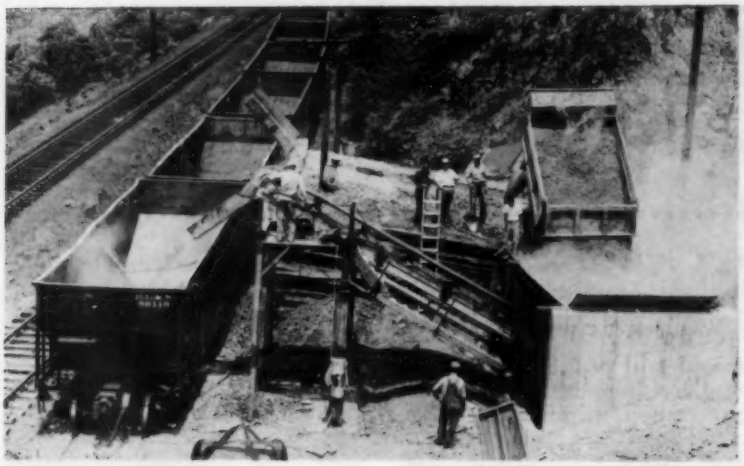
Plus 3-in. material from the top deck is fed from its bin to a pair of 37½ Kennedy secondary crushers. The product of one of these units is dropped on a 24-in. by 125-ft. conveyor and carried to the "A" building of the older plant. From the other crusher, rock is elevated 110 ft. in 24-in. buckets and discharged onto a 5- by 12-ft. Kennedy type AAA 3-deck screen. Five sizes ranging from 1½ in. to dust are graded on this and the succeeding 42- by 72-in. 2-deck Robins Gyrex screen, and then placed in storage bins.

Crushed material conveyed to the "A" building from the secondary crusher is emptied on a 4- by 10-ft. 2-deck type A Kennedy-Van Saun screen. This unit, and the succeeding 4- by 8-ft. 3-deck Kennedy Type A shaker, separate the product into six sizes—ranging downward from 1½ in. to dust. Oversize (plus 1½ in.) from the top deck of the above 4- by 10-ft. screen is fed to a 60-ton bin, from which it is carried automatically on a 24-in. by 30-ft. conveyor to a 37½ Kennedy gyratory crusher for fine reduction. This crushed product is then discharged onto an 18-in.

Left: Work as usual at Somerset. Here is evidence of the planning which permitted operations to continue during the construction of plant additions.

Below, left: A view into the receiving bin of the 36-in. gyratory primary crusher.

Below: The newly-completed sizing tower after it was put in operation.



Sized aggregate being dumped into the trackside hopper for rail shipment.

bucket elevator and raised 90 ft. to a 2-deck Robins Gyrex screen. The resulting three sizes—minus 3/5 in. to dust—are discharged to appropriate storage bins.

The entire operation, from the division of raw feed through the separate crushing circuits, is extremely flexible and can meet almost any requirements of quantities or sizes with the minimum of difficulty.

Loading into trucks from stockpiles around the plant is accomplished with a 4-cu. yd. Allis-Chalmers HD front-end loader, a 2½-cu. yd. 175A Michigan loader, and a 1½-cu. yd. HMC Hough loader. Delivery of plant products was formerly handled by a fleet of 80 company-owned trucks, but it was found that this phase could be more economically carried out with hired units, and the company's fleet has been progressively reduced.

In addition to the various crushed sizes of stone furnished by the crushing and screening operations, a substantial tonnage of rip-rap, or jetty stone, is sold for construction and repair of jetties along this portion of the eastern seaboard. This material is usually quarried in very large blocks weighing from two to twelve tons, and is furnished directly out of the quarry. In the past, rail facilities had been utilized to ship these blocks. However, the company found that they could be hauled on flat trailers to a project such as the Atlantic City jetty for about $3 per ton, while rail haulage would cost about $3.20. As a consequence, 17 flat trailers 28-ft. long were acquired. These are pulled by Mack B-60 tractors, and can carry up to 20 tons of rip-rap each.

The fact that very little repair work is farmed out by the company is due to an efficiently equipped and well-staffed machine shop. Lathes, drill presses, welding machines, and many types of metal-working equipment are available for the mechanics, welders, and blacksmiths who make up the shop personnel. Most items needed by the quarry are manufactured here, and the shop is also capable of rebuilding car and truck frames and bodies.

There is one achievement of the Somerset quarry of which Mr. Ferrante is particularly and justifiably proud—its safety record. There has not been a fatality in the quarry operation since it was taken over in 1945. This is due not only to the constant vigilance of the management and provision for safety, but also to the effective co-operation of the employees in adhering to all safety regulations.

The nearby Peapack Limestone Quarry at Peapack, N. J., was acquired by Mr. Ferrante in 1947. The stone at this location is a high-calcium limestone, and the chief product for many years has been hydrated lime for agricultural purposes. The daily output of this quarry, when taken over by Mr. Ferrante, was about 8 tons per day. New equipment was almost immediately added, with a resulting increase in daily production to 45 tons. The complete line of Peapack products includes hydrated lime, pulverized limestone (which is replacing hydrated lime locally for agricultural purposes), lump lime, building stone, and crushed stone.

Up in the hills overlooking the quarry operation at Bernardville, the company has its Somerset asphalt plant. This operation, which is a batch-type plant, was designed and produced by the F. D. Cunner Company. There are five main operations in this plant, including feeding and blending the raw feed (from the company's quarry), drying, sizing the aggregates, weighing ingredients for the type of mixture being prepared, and mixing the proportioned materials with the binding agent, asphalt cement. Ingredients used in manufacturing this bituminous concrete are produced, with the exception of the asphalt, by Ferrante operations. The stone used is furnished by the Bernardsville quarry, and the filler (pulverized limestone) comes from the Peapack operation. Considering the fact that the asphalt is also produced in New Jersey, the finished commodity is strictly a local product.

Until the beginning of 1955, ready-mix concrete was another product manufactured as a Ferrante enterprise. This was a modern dry-batch plant which serviced 12 transit-mix trucks. Bins and other facilities of this operation are located adjacent to the secondary screening plant, thus eliminating rehandling of the aggregate. A 1,500-bbl. Heltzel bulk cement storage bin is supplied by rail shipments of bulk cement. The daily output of this operation was 200-cu. yd. of concrete. However, the plant is now being operated by the Colonial Somerset Ready Mix Company, which took over early this year.

One factor contributing to the esteem in which the owner of this company is held is his noted generosity. Not only has he furnished labor and materials in the building of many community projects, but he has opened his home — an estate called "Tall Oaks" which was formerly owned by Tommy Dorsey—for many benefits and fund-raising functions of local and national drives.

The borough of Bernardsville can well be proud of a commercial organization which considers the welfare of the community of such importance that it assumes a major role in organization of a civil defense program. Under the direction of Jimmy Ferrante, who is general manager of the company, three units of his company's men and equipment have been organized for evacuation, clearing, transportation, or any other need arising in the event of an emergency or attack.

Among the key men who have contributed to the success of the company are the following: Walter T. Welsh, office manager and assistant treasurer; Charles P. Preen, supervisor of the blacktop plant; Fred Dolson, quarry superintendent; Jimmy Ferrante, general manager; and George West, truck manager and purchasing agent.

Labor Developments

The 1955 Round

BY NOW, practically all of the major industries have made their 1955 labor settlements. As always, the effects will be felt for some time by smaller companies and industries. To anticipate the demands which are likely to be made on the smaller units, it is important to review what the larger units have already given.

First of all, there are the sizable 1955 wage rate increases, led by the 15 cents-per-hour increases given in the soft coal, steel, and aluminum industries. Right behind them were increases amounting to 14 cents an hour in copper mining and meat packing, 13 cents per hour in can manufacturing, 12½ cents per hour in glass, and 10 cents an hour in oil refining.

While auto manufacturers and the principal electrical appliance manufacturers gave somewhat smaller 1955 increases—8 and 6 cents an hour respectively—they also committed themselves to make cost-of-living adjustments during the year and to make further increases in each of the next two years. In the automobile industry those future increases in 1956 and 1957 are for 2½ percent or 6 cents an hour, whichever is greater, and in electrical manufacturing they are 3 percent or 4½ cents an hour, whichever is greater. Not only has the 1955 pattern been set, but the beginning of further raises in the next two years has also been established. In view of these settlements, most employers will find themselves facing a wage demand that begins no lower than 15 cent an hour.

But that is not all. 1955 was a big fringe benefit year. With the cost-of-living edging up, escalator clauses are coming back into vogue, and they are providing escalation at a somewhat more rapid rate. The inclusion of this provision in the automobile contracts has already resulted in a further 1-cent-an-hour increase in pay. Particularly those companies which had a cost-of-living escalator clause in their contract during the

By S. HERBERT UNTERBERGER
S. Herbert Unterberger and Company
Industrial and Labor Economist
Washington, D.C. - Philadelphia, Pa.

Korean War period, can look forward to a demand that those clauses be continued or revived.

The unions also made great gains in the area of improved pensions in their bargaining with the nation's largest employers. A new union victory in the pension field occurred when workers won a vested interest for long service workers in pensions in the automobile and General Electric contracts. This means that a long time worker—generally with more than 10 or 15 years of service—who leaves the company, keeps his pension rights. This will improve labor mobility, but it adds significantly to the cost of providing the pensions.

Also, new kinds of fringe benefits have been agreed to which further increase the protection against ordinary hazards supplied to a worker along with his job. Insurance covering major medical expenses—such as the high costs of tuberculosis or heart disease—and dental bills have been included in some of this year's packages.

Finally, of course, there was the break-through on guaranteed wages which this year generally took the form of supplementary unemployment compensation benefits.

Certainly, not all of these demands will be made upon all employers at the same time. It would be equally unreasonable for an employer to expect that he will avoid all of them. Caution requires the assumption that sooner or later he will be faced with them and he should start preparing for that event right now.

Opening the Books

In August, 1954, it looked as if the National Labor Relations Board had finally settled a controversy which had been raging ever since the end of World War II, when Walter Reuther demanded that the Ford Motor Company give him a "look at the books." In a case decided at that time, the Board enunciated the general rule that an employer who claimed that he could not give a wage increase because of his inability to pay was not required to permit inspection of his books, provided that he furnished adequate information in some other form to support his claim. In that case the employer did give the union a statement of its net earnings in the previous year plus a detailed memorandum setting forth the reasons why he could not afford to meet the union's demand.

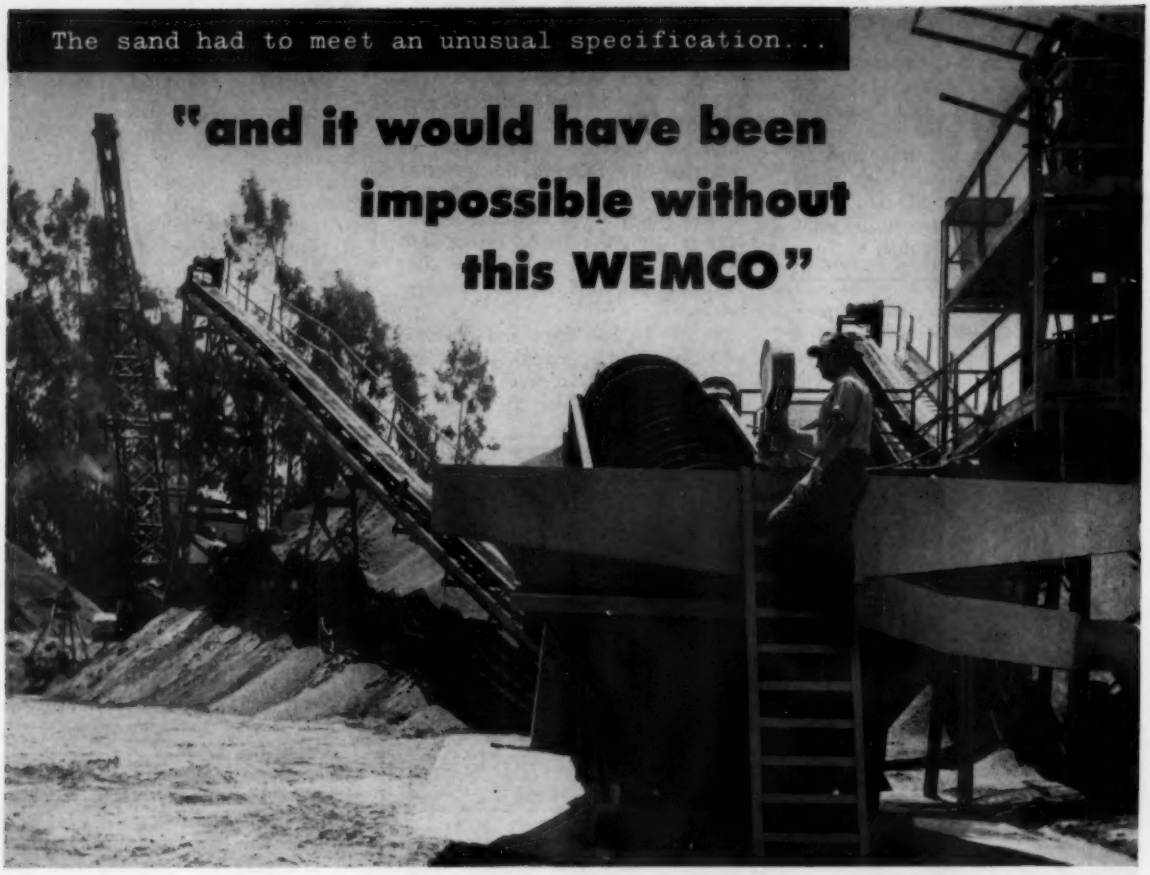
A recent decision by the Fourth Circuit Court of Appeals has reopened the whole issue, and it now appears that the Supreme Court may have to get into it to settle the matter. In its ruling the Court said, ". . . We do not think that merely because the company has objected to a proposed wage rate on the ground that it cannot afford to pay it, good faith bargaining requires it to open its books to the union in an effort to sustain the ground that it has taken." So far the Court's ruling does no violence to the N.L.R.B.'s position.

However, the Court went on to say, "To bargain in good faith does not mean that the bargainer must substantiate by proof statements made by him in the course of bargaining. It means merely that he bargain with a sincere desire to reach an agreement." Here, the court is in complete opposition to the N.L.R.B.'s position. This statement has given rise to a great deal of speculation about what it really means.

If it is finally upheld, this statement could add a new note of cynicism to collective bargaining, since it leaves the bargainer free to make any statements he wishes without being required to substantiate them. The final test would be not his actions, which can be observed, but his motivation, which is known only to himself. All seems to be forgiven if he "bargains with a sincere desire to reach an agreement." How one goes about proving the sincerity of a bargainer's desire remains an unanswered question. This confusion opens the door to all kinds of extreme statements by the bargainers on both sides of the table; such statements

The sand had to meet an unusual specification...

"and it would have been impossible without this WEMCO"



When the Niles Sand and Gravel Company got the sand and aggregate order for the Ford Motor Company's new assembly plant in Milpitas, California, it was on the basis of an exceptionally rigid sand requirement. It has now been successfully fulfilled, and H. G. Clouser, Niles plant superintendent, reports, "this would not have been possible except for the adaptability of our 60-inch Wemco Sand Preparation Machine".

With 60,000 yards of concrete being poured on this one Ford plant, the fineness modulus was not permitted to vary more than 0.2%. Plus 200 mesh fines had to be retained in correct proportion and – 200 mesh had to be eliminated as completely as possible. A continuous materials testing program was under the direction of Hales Laboratories of Oakland.

After his experience on these very exacting requirements, Mr. Clouser of Niles Sand and Gravel Company states, "I believe that the Wemco Sand Preparation Machine, intelligently used, can meet practically any desired sand specification." "It has proven particularly adaptable to various operational changes we have made." "The hydraulic screw lift makes it readily adjustable to day-to-day pit variations." "And it has been one of the most troublefree pieces of equipment in our plant (three years running on its original wear shoes)."

For descriptive literature, write Dept. K-2442.

Plant operator Tom Brannon using the hydraulic spiral lift. This simple adjustment compensates day-to-day pit variations, and in locations where freezing is a problem may also be used to break surface ice (eliminating the need for draining the tank for overnight shutdown).

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when called to account, would be excused on the ground that they were made on behalf of reaching an agreement.

The end effect of this decision is that employers are left more up in the air than ever. Claiming inability to pay is still fraught with many pitfalls. Prudence would seem to dictate that the use of almost any other reason would be preferable.

HARRY C. MAY, 66, retired partner in the Caruthersville Sand & Gravel Company, Caruthersville, Mo., died recently in that city after a protracted illness.

Kiln Firing

(From page 75)

puted at 185,000 c.f.m. at 480 deg. F. and corrected for the control run, was determined to be 33.2 lb. per hour. It was concluded from the test that the SO_2 in the gases of combustion reacts with the alkaline in the slurry feed, resulting in the appearance of sulphur compounds both in the clinker and the dust particles collected by the precipitators.

From the test data and observations, it would appear that if all five kilns of this plant were operating wholly on fluid coke, the total sulphur released to the atmosphere would probably be on the safe side, or not objectionable, assuming there is a 50-50 split of the sulphur found in the stack gases and in the dust collected by the precipitators. The amount of sulphur found in the clinker was insignificant. Any reduction of the total coke burned or a reduction of sulphur below the 6 percent analysis of this sample would minimize air pollution.

It may be concluded that fluid coke is a fuel which with proper handling and design of facilities can be burned with good combustion characteristics.

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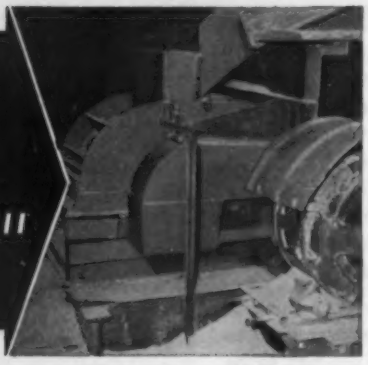

On-the-job photos, above, show actual results—uniform cubical output—from a hard working Eagle Hammermill in the heart of the nation's lime stone country.

Especially gratifying is the superintendent's report on this machine: "No downtime in over 4 years."

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Cement Companies Report Record 6-Month Earnings

Lehigh Portland Cement Company has announced a net income of $4,632,113 for the first six months of 1955, as compared to $2,660,888 in Jan.-June, 1954. Sales for the first half of this year amounted to $31,939,510; last year sales were $24,701,958 for the same period. These increases were accomplished despite strikes in 15 of the firm's plants during these months.

Calaveras Cement Company reported a net income of $672,268 on sales of $5,082,539 during the six-month period ending June 30, 1955. During the corresponding months of last year the company had net earnings of $467,449 on sales of $4,249,507.

New Type Aggregate Reduces Concentrating Costs, Weight

At its Kilgard plant, 60 miles from Vancouver, B. C., in the Fraser valley, the Clayburn Company has begun production of a lightweight concrete aggregate which it claims will lower the weight of concrete by one-third and which will reduce concentrating costs up to 25 percent.

Named Kilgard, this lightweight material is produced by passing shale through a 2,200-deg. temperature in a rotary kiln. Gases thus formed within the shale force it to expand. The material was recently put on the market after three years of research.

A fire caused by lightning damaged tools and buildings of the Radford Limestone Company, Radford, Va., to the extent of $20,000. Firemen succeeded in preventing the blaze from spreading to a nearby storage place for oil and dynamite caps. A previous fire on December 23, 1954, destroyed equipment valued at $25,000.

More Information, Please

Use the prepaid postcard to get this literature or additional details about new equipment and products reported elsewhere in this issue.

CRANES can be leased without capital investment from the *Orton Crane & Shovel Company*. This bulletin gives full details on the plan and also discusses the need and purpose for the program. (1)

WEAR, ABRASION, IMPACT damage is greatly lessened when Admiro H.T. alloy steel made by the *Admiral Alloy Steel Corp.* is applied to parts that must withstand such punishment. It possesses a tensile strength of 150,000 p.s.i., and a Brinell hardness of 365-400. Admiro H.T. has good machinability—75% rating as compared with a free machining steel rating of 100%. (2)

CLAMSHELL BUCKETS made by the *Blaw-Knox Company* are listed in this catalog. Included are classified tables of some 60 different sizes of buckets, containing weight, dimensional and capacity data, and other pertinent facts. (3)

WHEEL TRACTORS are covered in this brochure from *The Oliver Corp.* Available with engines of 49.81 hp. or 40.16 hp., the tractors can be equipped with boom attachments, digging bucket, parallel lifting fork, and many other attachments. (4)

WORM GEAR DRIVES that are built to stand up under long and rough usage are the subject of this pamphlet from *The Cleveland Worm & Gear Co.* These speed reducers are available in sizes from fractional hp. to over 300 hp., and in ratios from 3 1/7 to 1 to 10,000 to 1. (5)

IMPACT CRUSHING is achieved with low cost and high efficiency when using the Tornado impact crusher, manufactured by the *Werco Steel Co.* It has only one moving part and gives a square impact that delivers up to 70 t.p.h. with the 4½ ft. model. Get the details from this informative bulletin. (6)

HYDRAULIC BOOMS put out by *Ingersoll-Rand* are covered in this booklet. It describes Hydra-Boom applications, their advantages over other drills, and it also contains information on many ways of mounting the machines. (7)

SHOVEL, DRAGLINE, CRANE are described in this pamphlet offered by the *Manitowoc Engineering Corp.* Their Speedcrane is of 40 to 50 tons capacity and the Speedshovel is of 2 yd. capacity. (8)

BETTER REFRACTORIES for 25 years has been the goal of the *Mexico Refractories Co.* This special booklet gives an inside look at the care and work which goes into the processing and manufacturing of the firm's products. (9)

POWER TRANSMISSION is the specialty of the *Twin Disc Clutch Co.* This publication gives some idea of the work that goes into producing the concern's transmissions and the ways in which they can afford you really worthwhile savings. (10)

RADIOACTIVE TRACING techniques were used in a recent laboratory test of the penetrating powers of a fish-oil-based protective coating compounded by the *Rust-Oleum Corp.* This report gives proof of the effectiveness of the company's coating. (11)

CARBON ELECTRODES for manual application made by the *Pacific Welding Alloy Mfg. Co.* are composed of high carbon wire and will deposit a carbon ratio of 0.60 to 0.70. Application is by either a.-c. or d.-c. straight polarity. (12)

AIR PRESSURE will be the topic for consideration in a new journal to be published bi-monthly by the *Ross Operating Valve Co.* Called the "Ross enginAIR," it will feature many articles of interest to anyone using controlled air pressure and is free of charge. (13)

HEAVY EQUIPMENT, such as preliminary crushers, mechanical conveyors, rotary kilns, mills, and entire factory layouts, are "old hand" with *Polysius,* a German firm of established repute. This pamphlet gives some idea of the concern's size and quality of their product. (14)

A CRAWLER AND SCRAPER have been announced by the *Euclid Div. of GM.* A C-6 crawler is powered by a 194-hp. 6-71 engine and weighs 34,000 lb. The S-12 scraper is powered by a 218-hp. engine and has 5 forward and 1 reverse speeds. (15)

SAFETY INSTRUCTION cards which save time, money, and effort are offered by the *National Safety Council.* This sheet will give you full particulars and prices on their line of safety promotion cards. (16)

STARTING diesel engines is facilitated by using the new hydraulic starting system manufactured by the *Allison Div. of General Motors.* The "Hydrostarter" can be attached with little effort to almost any diesel engine up to 300 hp. (17)

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More Information, Please

Use the prepaid postcard to get this literature or additional details about new equipment and products reported elsewhere in this issue.

CONVEYOR BELTING selection is simplified by the use of these new slide rules offered by the *United States Rubber Co.* By combining readings from a horsepower calculator and a carcass, or belt fabric selector, it is possible to learn in a matter of minutes just the right belt for your job. **(18)**

DRILL BITS are listed in detail in this catalog of the *Hoffman Bros. Drilling Co.* Their "Oriented" bits contain many unusual advantages which are described together with other items of interest to drillers. **(19)**

INSTRUMENTATION and control systems utilizing the instruments made by *The Hays Corp.* are the topics of this booklet. It contains photos and schematic drawings of combustion guides, draft gauges, flow, level, temperature, and pressure instruments, and combustion control systems. **(20)**

RUBBER MATERIALS, hoses of all types, conveyor and elevator belts, transmission and V-belts, friction materials, etc., are listed in this catalog digest of the *Industrial Rubber Div. of the Thermoid Co.* It gives thumb-nail descriptions of many of the popular items made by this concern. **(21)**

TWO NEW ENGINES have been announced by the *Caterpillar Tractor Co.* These diesel engines both run at 1,200 r.p.m., and may be equipped with air, electric, or gasoline starting systems. The D342 is rated at 171 hp., and the D339 is rated at 112 hp. **(22)**

POWER SHOVELS, truck cranes, and other items are included in this bulletin from the *Harnischfeger Corp.* The firm's model 255-A and model 655-A offer utmost stability in power shovels of ¾-yd. and 1½-yd. capacities respectively. **(23)**

A LOCOMOTIVE has been added to the *Mancha Storage Battery Locomotive Division's* line. Suitable for either 18- or 24-in. gauge track, it is designed for continuous service where haulage demands do not exceed 1,000 lb. drawbar pull. It is powered by a Hercules 2-cylinder, 4-cycle diesel engine. **(24)**

MAGNETIC PULLEYS and magnetic pulley separators made by *Stearns Magnetic, Inc.,* are described in this brochure. The publication contains a simplified ordering chart and explanation of a new 2-coil pulley design. **(25)**

V-BELT DRIVES are easy to select when using this booklet with handy multi-color tables put out by *Allis-Chalmers.* The handbook also features valuable information on design features, basic drive principles, and technical data on sheaves. **(26)**

GEARS of all types and sizes are available from *Foote Bros. Gear and Machine Corp.* This convenient pamphlet lists their products with short descriptions and telling specifications of each type. **(27)**

ELECTRIC MOTORS of many types of construction are available from the *Wagner Electric Corp.* Among the models they manufacture are split phase induction, capacitor start induction, repulsion start induction, totally-enclosed nonventilated, wound rotor, open polyphase squirrel-cage, and totally enclosed fan-cooled motors. **(28)**

ROLLING BEARINGS made by the *Dodge Mfg. Corp.* are listed in this catalog. While featuring the new SCM line of ball bearing pillow blocks and flange cartridge mounts, this bulletin contains up-to-date technical information and list prices on the complete line of Dodge SC ball and Dodge-Timken roller bearings. **(29)**

HANDLING AND STORAGE of Chemicals is the title of the second brochure in the series headed Materials, Machines & Motions which is being published by *Sauerman Bros.* It describes Sauerman storage machines in use at a variety of installations and will be of interest to anyone with a materials handling problem. **(30)**

RAYON SEWING THREAD for multiwall paper bags is made by *American Enka Corp.* The superior strength and elastic properties of the thread permit the use of a smaller size. **(31)**

AXLE UNITS for a wide variety of trucks and portable special machinery units are made by the *Hendrickson Motor Truck Co.* Beam end rubber bushings on these units permit maximum flexibility and will take all oscillating movements without friction or lubrication. **(32)**

WOVEN WIRE SCREENS which are accurate, dependable, and readily available are manufactured by the *Simplicity Engineering Co.* Complete specifications of their wide variety of screens are given in this brochure. **(33)**

OCTOBER, 1955

Please send more information on circled items described in this issue:

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70	71	72								

In addition I would like information on:

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Company _____

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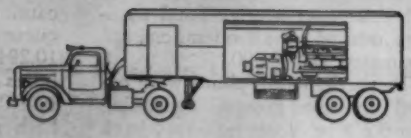
CATERPILLAR ANNOUNCES

A NEW LINE OF PORTABLE ELECTRIC SETS

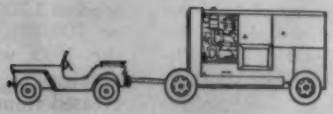
Dependable electric power—where it's needed, when it's needed

USE CAT PORTABLE ELECTRIC SETS

- When you're on a remote location with no high line power available.
- When there are delays in running power lines to your job.
- When power failures cause you to lose working time.
- When "demand" charges eat up profits.



CAT* Portable Electric Sets are now available in 9 models, 30 to 315 KW



These Caterpillar Portable Electric Sets are ready to serve you in emergency or full-time operation. They are available in all the usual voltages, 50 or 60 cycle.

Each is a complete unit, with cooling system, fuel tank and switch-gear, mounted on skids, semi-trailer or full trailer, ready to be moved anywhere you need it at a moment's notice. Even the biggest trailer-mounted set is well within highway weight and size restrictions.

The units are easy to hook up, easy to operate. They deliver steady voltage and require a minimum of supervision. Low fuel and maintenance costs are added advantages.

In this new line of portable electric sets, there's one that will exactly fit your needs. Get complete information from your Caterpillar Dealer. Call him today.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR*

*Both Cat and Caterpillar are registered trademarks—®

THE NEW STANDARD OF PORTABLE ELECTRIC POWER

CATERPILLAR TRACTOR CO., Peoria, Illinois, U. S. A.

Please send me further information on Cat Portable Electric Sets.

Name_____

Company_____

Street_____

City_____ Zone_____ State_____

Bureau of Mines Cites Winners In 1954 Sand and Gravel Competition

THE Bureau of Mines, United States Department of the Interior, has awarded Certificates of Achievement in Safety to 58 of the 172 plants which competed in the fifth annual Sand and Gravel Safety Competition. All of the winners of awards had no lost-time injury records during the entire year.

The over-all injury experience for the 1954 competition was a frequency rate of 22.2 injuries and a severity rate of 3.2 days per 1,000,000 and per 1,000 man-hours of work time respectively. Total man-hours worked by all operations approximated 11,000,000.

The participating plants were enrolled in two groups, depending upon the type of operation—a bank or pit group and a dredge group. Of the total number participating, 129 were enrolled in the former and 43 in the latter. Certificates of Achievement in Safety were awarded to the plants in which 20,000 or more injury-free man-hours were worked, and a Certificate of Accomplishment in Safety was awarded to each employee and official who worked at the winning plant in each group.

Bank or Pit Group — The Eliot Plant No. 104, operated by the Pacific Coast Aggregates, Incorporated, located at Pleasanton, Calif., for the third consecutive year, won top honors for having the best safety record in this group. This plant was operated 136,284 man-hours in 1954 without a lost-time injury. During the five years since the contest was inaugurated in 1950, the Eliot plant has reported ten lost-time injuries, all occurring in 1950 and 1951, during an aggregate work time of 759,283 man-hours. The injury-frequency rate during this period was 13.17 per 1,000,000 man-hours. For the ten injuries a total loss of 286 days was recorded, resulting in a severity rate of 0.38 day per 1,000 man-hours. Both rates were sharply lower than the corresponding average rates for 1954 and the rates for the 5-year history of the competition.

The 129 bank or pit plants were operated 7,200,000 man-hours. The injury frequency rate was 25.524, which was not so favorable as the 1953 rate of 21.790, and the severity rate of 2.755 was slightly higher than the 1953 rate of 2.516.

Dredge Group—The Eagle Lake operation of the Texas Construction Material Company, located at Eagle Lake, Tex., for the second consecutive year won top honors in this group of plants competing in the 1954 competition. A Certificate of Achievement in Safety was awarded this plant by the Bureau of Mines for an injury-free record during 162,200 man-hours of worktime. The Eagle Lake plant has been a participant in this competition since 1950, and during this 5-year period it has been operated a total of 679,990 man-hours with seven injuries, causing a loss of 128 days. The frequency rate over this period was 10.294 injuries per 1,000,000 man-hours of exposure and the severity rate 0.19 day per 1,000 man-hours; both rates were considerably lower than the respective average rates for the 5-year history of the contest.

As a group, dredge plants were worked 3,700,000 man-hours in 1954 or 700,000 man-hours more than the 1953 worktime. However, the number of lost-time injuries decreased from 76 to 58 in 1954 and, as a result, the injury-frequency rate showed a marked improvement, dropping from 22.118 in 1953 to 15.751 in 1954. Injuries sustained in 1954 were also less severe than those occurring in the previous year.

Perfect Safety Records — A total of 77 sand and gravel plants or approximately 45 percent of the total number of operations participating in the 1954 contest were operated during the year without a lost-time injury. Men at the 77 plants, including the two trophy winners, worked 3,475,743 man-hours or 32 percent of the time worked at all participating plants. Of the 77 injury-free operations, 24 were engaged in dredging and 53 were bank or pit plants. Included in this select group of injury-free operations were 19 which had not been worked 20,000 or more man-hours — the minimum work time required by the contest rules for an award. A number of those plants have enrolled in the contest each year with full knowledge of the eligibility requirements for an award. The employees and officials at these operations are highly commended for their continued interest in the competition and their perfect safety records.

Statistics — The safety record of the 172 competing plants in 1954 was a total of 241 lost-time or disabling injuries during an aggregate worktime of 10,851,954 man-hours, resulting in a frequency rate of 22.208 injuries per 1,000,000 man-hours. While this rate was slightly higher than the previous year's rate (21.882), it was slightly lower than the average rate for the 5 years the contest has been in existence. The number of days lost due to injuries was 34,492, resulting in a severity rate of 3.178 days per 1,000 man-hours, which was slightly higher than the average rate for the 5-year history of the competition. The 241 injuries were divided as follows: fatal, 3; permanent partial, 13; and temporary total, 225. The average severity of all injuries was 143 days and of temporary injuries 23 days.

Causes of Injuries — The principal causes of injuries during the 1954 competition, with few exceptions, followed a pattern established over the years of the competition. Accidents involving falls of persons, handling objects, machinery, falling objects, and haulage accounted for over half the total number of injuries at all participating plants.

Scope of the Competition — The nation-wide interest in the Bureau of Mines Sand and Gravel Competition for 1954 was indicated by a record enrollment of 172 bank, pit, and dredge operations in 30 states.

Any bank, pit, or dredge plant operating an unconsolidated sand and/or gravel deposit is eligible to participate in this competition, which is sponsored and conducted annually by the Bureau of Mines, United States Department of the Interior.

Enrollment applications, rules, and information on the competition, are available, upon request, from the Branch of Accident Analyses, Bureau of Mines, Washington 25, D. C.

Injury-Free Operations—The following plants, excluding the two trophy winners, had no lost-time injuries during 1954.

Dolen dredge, Texas Construction Material Co., Romayor, Tex., 154,550 man-hours.

Marquette dredge, Marquette Cement Manufacturing Co., Memphis, Tenn., 136,111 man-hours.

Flint Sand and Gravel dredge, Jahncke Service, Inc., Bluff Creek, La., 123,135 man-hours.

Franklin dredge, Warner Co., Tullytown, Pa., 116,323 man-hours.

Fair Oaks No. 111 dry-wet pit, Pacific Coast Aggregates, Inc., Fair Oaks, Calif., 99,777 man-hours.

Greenville dredge, Greenville Gravel Co., Greenville, Miss., 96,542 man-hours.

Quigley wet-pit, Hurst Grael Co., Hurst, Tex., 92,677 man-hours.

(*Continued on page* 104)

IOWA AGRICULTURAL LIMESTONE ASSN. EDUCATES CONSUMERS WITH BILLBOARDS

DESPITE the widely publicized need for agricultural lime in the soils of this country, the aglime industry is again facing the problem of educating and selling the farmer on the necessity of lime application. Millions of tons are needed merely to bring soil acidity to a proper level, disregarding the fact that to maintain the proper balance between acidity and alkilinity approximately 30,000,000 tons would have to be applied annually.

In the state of Iowa alone the initial need for agstone is 50,000,000 tons, after which 4,000,000 tons per year would be required to maintain neutralization. To express the situation in another fashion; if enough conventional-type lime spreading trucks were available to divide the 50,000,000 tons into 5-ton loads, they would, if placed bumper to bumper, cover a distance of 37,800 miles.

The Iowa Agricultural Limestone Association, Inc., under the leadership of Clint A. Allen, its executive-secretary, initiated in 1949 a billboard advertising program which continues to grow. The association feels that posters, placed on billboards on the highways, will tell the story of agricultural limestone, and by acting as a constant reminder to the farmer will help increase sales of the commodity.

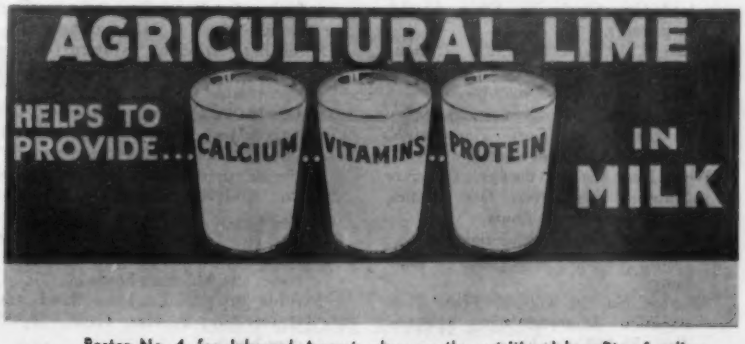
A new series of six posters for the year 1956 has been prepared and since each poster is considered to be durable enough to withstand sixty days exposure, the six constitute a full year's supply. The new advertising program will start Jan. 1, 1956, which will allow ample time for agstone producers to arrange for using this promotion.

These posters, which are displayed on regulation 12- by 25-ft. billboards and attractively colored, are illustrated here. During 1955 there were 43 billboard posters being displayed on Iowa's highways by producers in addition to some in two other states. The Iowa group hopes to have not less than 60 in use during 1956. Use of this form of promotional advertising is being offered by the Iowa Agricultural Limestone Association to limestone producers in other states. Those interested should first establish the availability

Poster No. 1, to be displayed in January and February, has an arresting message.

In March and April the No. 2 poster will be keyed to the planting season.

The summer (May and June) poster, No. 3, stresses the returns from good soil.



Poster No. 4, for July and August, plays up the nutritional benefits of aglime.

Poster No. 5, designed for use during September and October, carries a "Remember!" message.

The holiday spirit is seen in Poster No. 6, to be used during November and December.

of billboard space and location in their areas. Then by writing to Mr. Allen at 400-401 Teachout Building, Des Moines, Iowa, full information and contract forms for ordering the posters may be obtained. At the bottom of each poster, in black lettering measuring 20 in. in height, the association will have printed the name of the participating producer.

In a seasonal relationship to the farming cycle, the series of posters is keyed to preparation, maintenance, and seeding of soils. Also, sight is not lost of the fact that urban populations should be kept informed on necessary soil treatment in the production of nutritious foods.

The entire cost for this type of advertising is estimated to run less than $1.00 per day. After ordering posters and completing arrangements with outdoor billboard companies, a producer has no more concern. Every sixty days the association will ship the posters direct to the designated billboard company for posting. To keep the producer or dealer names in type as large as possible, the association recommends that telephone numbers and locations be kept to the minimum.

Safety Contest Winners

(*From page* 102)

Portage dry-bank, Industrial Silica Corp., Garrettsville, Ohio, 90,645 man-hours.

Elgin dry-bank, The Chicago Gravel Co., Elgin, Ill., 86,382 man-hours.

Hudson dry-wet pit, Gifford-Hill and Co., Inc., Hearne, Tex., 82,555 man-hours.

Boonville No. 1 dry-bank, Eastern Rock Products Inc., Boonville, N. Y., 81,714 man-hours.

Crystal Lake No. 388 dry-bank, Consumers Co., Crystal Lake, Ill., 81,203 man-hours.

Centerville No. 106 wet pit, Pacific Coast Aggregates, Inc., Centerville, Calif., 79,753 man-hours.

Kerlinger No. 114 dry-pit, Pacific Coast Aggregates, Inc., Tracy, Calif., 78,360 man-hours.

Circleville dredge, The Sturm and Dillard Co., Circleville, Ohio, 67,918 man-hours.

Plants 9, 10, and 11 dredge, Lyman-Richey Sand and Gravel Corp., Valley, Nebr., 60,842 man-hours.

Plants 5 and 6 dredge, Lyman-Richey Sand and Gravel Corp., Plattsmouth, Nebr., 58,426 man-hours.

West Des Moines dredge, Concrete Materials Co., West Des Moines, Iowa, 57,362 man-hours.

Cayuga dry-bank, Material Service Corp., Cayuga, Ind., 56,503 man-hours.

Alleyton No. 20 wet-pit, Texas Construction Material Co., Alleyton, Tex., 56,430 man-hours.

Alleyton No. 1 wet-pit, Texas Construction Material Co., Alleyton, Colorado County, Texas, 54,680 man-hours.

South Elgin dredge, Material Service Corp., Elgin, Ill., 50,674 man-hours.

Fort Jefferson dry-wet pit, American Aggregates Corp., Fort Jefferson, Ohio, 46,737 man-hours.

Plant No. 4 dry-bank, Janesville Sand and Gravel Co., Janesville, Wis., 45,731 man-hours.

Plant No. 5 dry-pit, Janesville Sand and Gravel Co., Janesville, Wis., 44,540 man-hours.

Northport dry-bank, Metropolitan Sand and Gravel Co., Northport, N. Y., 44,103 man-hours.

Jere dry-wet pit, Southwest Construction Materials Corp., Dallas, Tex., 42,946 man-hours.

Kingsbury wet-pit, Hurst Gravel Co., Euless, Tex., 41,914 man-hours.

Plants 12 and 13 dredge, Lyman-Richey Sand and Gravel Corp., Fremont, Nebr., 41,443 man-hours.

South Bend dry-bank, Western Indiana Gravel Co., South Bend, Ind., 40,285 man-hours.

Rockfield No. 124 wet-pit, Pacific Coast Aggregates, Inc., Fresno, Fresno County, Calif., 35,944 man-hours.

Eddyville dredge, Concrete Materials Co., Eddyville, Iowa, 35,057 man-hours.

Plant No. 7 dredge, Lyman-Richey Sand and Gravel Corp., La Platte, Nebr., 34,942 man-hours.

Perkins dry-pit, Brighton Sand and Gravel Co., Perkins, Calif., 33,953 man-hours.

Leesburg dredge, Western Indiana Gravel Co., Leesburg, Ind., 33,533 man-hours.

Alleyton No. 21 wet-pit, Texas Construction Material Co., Alleyton, Tex., 33,470 man-hours.

Fort Wright dry-pit, Union Sand and Gravel Co., Spokane, Wash., 33,367 man-hours.

Plant No. 2 dredge, Lyman-Richey Sand and Gravel Corp., La Platte, Nebr., 32,041 man-hours.

Falmouth dry-bank, Frederick V. Lawrence, Inc., Falmouth, Mass., 31,517 man-hours.

Lebanon wet-pit, Lebanon Sand and Gravel Co., Lebanon, Oreg., 30,812 man-hours.

Massillon dry-bank, The Canton Slag Co., (Sand Division), Massillon, Ohio, 30,775 man-hours.

Plant "A" dredge, The Buffalo Slag Co., Inc., Allegany, N. Y., 30,085 man-hours.

Ludlow Falls dry-wet pit, Steiner's Sand and Gravel Co., Ludlow Falls, Ohio, 28,412 man-hours.

Albany dry bank-pit, Albany Gravel Co., Inc., Albany, N. Y., 36,309 man-hours.

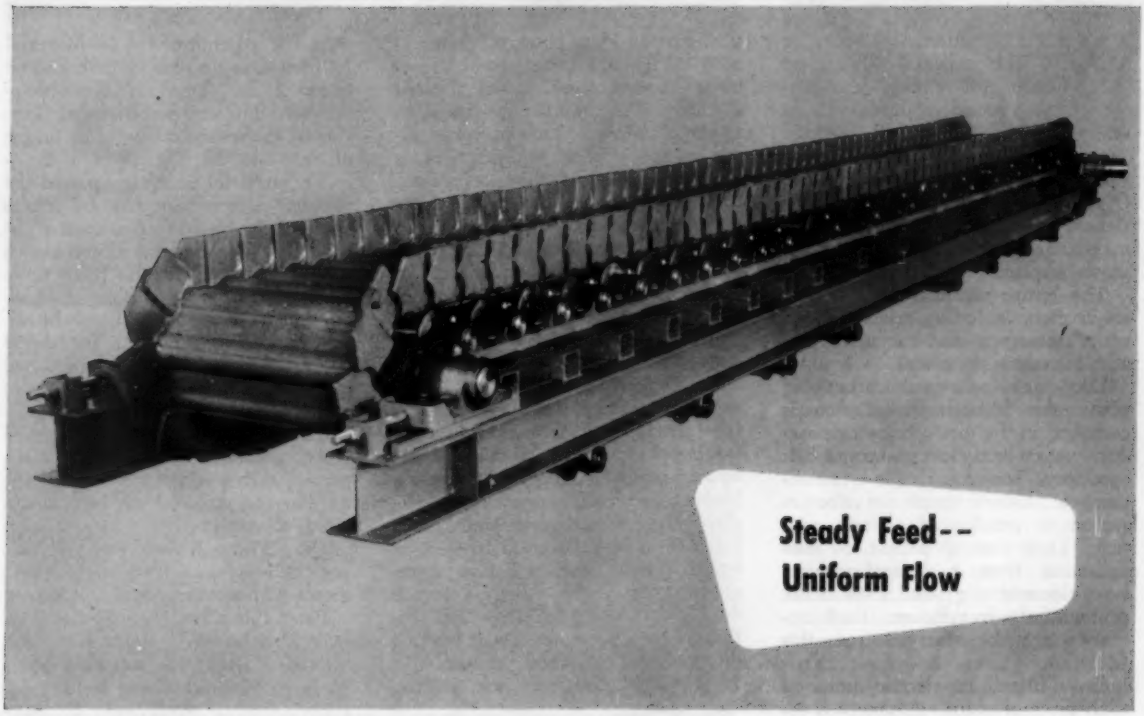
Geauga dry-bank, Industrial Silica Corp., Aurora, Ohio, 25,306 man-hours.

Alleyton No. 24 dry-pit, Texas Construction Material Co., Alleyton, Tex., 24,600 man-hours.

Sussex dry-bank, Edw. Lutz Sand and Gravel Co., Sussex, Wis., 24,153 man-hours.

(*Continued on page* 114)

Millions of KNOCKS without a KNOCK-OUT



for TISCO® PAN FEEDERS

When impact and abrasion get together, they swing a mean hammer on heavy-duty equipment. Take this TAYLOR-WHARTON PAN FEEDER, for instance. When it is used on such tough jobs as conveying heavy trap rock to a crusher, it really takes a beating. During every minute of its operation, tons of heavy rocks crash down on its pans, to be conveyed at a uniform rate to the crusher. TAYLOR-WHARTON PAN FEEDERS not only increase crusher output but they also equalize the load fed to the crusher.

Such rough usage calls for something special in pan material and design. Each pan is of TISCO MANGANESE STEEL, composed of base plate, aprons and chain links cast integrally. No welding is used in its construction.

Contributing also to the exceptional durability of the TISCO PAN FEEDER are its MANGANESE STEEL Head Sprockets, Idlers and Rollers—premium quality parts not ordinarily found in Pan Feeders.

Send for further information or let us have a Sales Engineer confer with you.

TAYLOR-WHARTON Iron & Steel Co.

(Division of HARRISBURG STEEL CORPORATION)

HIGH BRIDGE 3, NEW JERSEY

Cincinnati, O. Birmingham, Ala. Easton, Pa.

PUSHBUTTON OPERATION
Reduces Manpower and Maintenance For Ohio Aggregate Producer

WHILE "automation" may be a controversial word in some industrial circles, the approach to automatic plant operation, undertaken by the Vanatta Gravel Company, a subsidiary of the Newark Asphalt Paving Company of Newark, Ohio, has greatly increased plant efficiency, while drastically reducing maintenance and operating manpower requirements.

The entire plant is operated by seven men, including truck drivers, plant operators, and executive and administrative personnel.

Like any aggregate producing plant, the Vanatta installation is complex in its first-glance appearance, yet its criss-cross pattern of belt conveyors, screens, crushers, scrubbers, etc., hides a simple yet effective system of interlocked electric controls. These controls permit one-man operation from a central control board located at ground level in the center of the installation. Each operation may be observed from this point.

In addition, the electric motor of each piece of plant equipment is interlocked so that in the event of a stoppage or breakdown of any piece of equipment, all equipment which precedes it in the flow of material through the plant shuts off immediately. When the last piece of equipment has shut itself down, a siren sounds, calling immediate attention to the shutdown. This prevents piling on the belts or jamming screens or crushers and minimizes any wasted time in cleanup after the stoppage has been relieved.

The Vanatta plant is situated in the heart of a deposit of more than 100 acres of gravel. The depth of the deposit is 36 ft., divided evenly, 18 ft. above and 18 ft. below the water table.

As Osgood ½ cu. yd. shovel is used to excavate the gravel directly from the bank. It is trucked to a 25-ton hopper, from which it is fed out by a 24-in. by 5-ft. reciprocating plate feeder. All belt conveyors in the plant are Barber-Greene units. The first one, a 24-in. unit 93 ft. 6 in. in length, carries the bank run aggregate to a 4- by 12-ft. Telsmith double-deck scalping screen. Everything over 1½ in. in size is scalped off, and the oversize is chuted to a 10- by 21-in. Telsmith jaw crusher, reducing it to minus 1½ in. Material minus 1½ in. to plus ⅞ in. is chuted to a 24-in. Telsmith Gyrasphere crusher. The crushed material is returned to the first conveyor by means of an 18-in. by 57-ft. 6-in. belt.

The material which has passed the scalping screen proceeds, by means of an 18-in. by 78-ft. 6-in. belt to its discharge point atop a 42-ton struck capacity hopper. At this point there is a two-way gate, by means of which all crusher run material can be diverted into the hopper for direct truck loading, or can be continued on through the succeeding phases of processing.

The installation of this hopper, a recent addition, has effected a manpower saving since previously the crusher run material has been stockpiled, then reclaimed with a bucket loader. Through the use of the hopper, drivers may load their trucks direct without the use of the loader.

From this point, the material flows over a 4- by 10-ft. double-deck desanding screen. The top deck has a ¾-in. mesh and serves as a load-relieving deck to prevent build-up on the lower screen. The sand is screened out of the bulk of aggregate with the help of a high-pressure water spray. The sand removed at

At the Vanatta Gravel Company's pushbutton operation near Newark, Ohio, it is only a short haul for material from the bank through the plant and back into a finished product stockpile.

The hopper, recently installed (right), has eliminated a power loader and an operator, since it permits drivers to load crusher-run directly into their trucks.

this point, plus any sand returned to the system as a result of further processing of the gravel aggregate, passes through a sand drag, thence onto a 24-in. by 91-ft. Barber-Greene radial stacker. This unit builds a circular stockpile through an arc of 270 degrees. Reclaiming from the stockpile is by means of a bucket loader.

Returning to the flow of gravel, the material, after passing over the desanding screen, is put through a 72-in. Telsmith scrubber. The water is drained, and the scrubbed gravel passes into a Stedman impact crusher for the removal of soft stone. Here each aggregate particle is hurled against an armored steel surface. The impact reduces the soft stone to sand, which is returned, together with that removed in the scrubber, to the sand drag and stacker previously discussed.

From the impact crusher, the aggregate is carried by an 18-in. by 156-ft. Barber-Greene belt conveyor to a triple-deck, 4- by 12-ft. vibrating screen mounted over a four-bin truck-loading unit.

The screen cloths in the triple-deck unit are as follows: top, 1 in.; middle deck, ⅜ in.; and bottom deck (split)—upper 6 ft., ⅛ in., and lower 6 ft., ¼ in.

On the top two decks, the material is again washed to remove any sand particles created in the impact crusher, and this sand is diverted back to the sand drag.

This screening produces crushed gravel aggregate of the following specifications:

Ohio #3	Maximum size 1½ in.
Ohio #4	Maximum size 1 in.

Above: Venetta's pushbutton operator's station. In the rear are the automatic cut-off switches and resets. In case of a jam-up, these shut down units, then sound warning.

Left: A truck dump accomplishes the first step in the processing of four sizes of Ohio specification crushed gravel.

Ohio #6	Maximum size ½ in.
Ohio #9	Maximum size ⅜ in.

Each of the four sizes is stored in a separate bin, beneath the screens, and can be loaded directly into trucks.

Essential to the plant operation is the water supply system. Fortunately, the plant is situated near a small lake, and water is drawn from this lake by means of a 75-hp., 1,325 g.p.m. pump which carries the water some 500 ft. and provides the pressure for the washer spray nozzles. A second pump, operating at 1,200 g.p.m., returns the waste water to the opposite end of the lake, from which the fresh supply is drawn.

Maintenance and Engineering Theme of Philadelphia Show

The Plant Maintenance and Engineering Show, one of the largest annual industrial expositions in the country, will return to Philadelphia for the 1956 event, it was announced by Clapp & Poliak, Inc., New York, producers of the show. At the same time, the seventh Plant Maintenance and Engineering Conference also will be presented.

A wide range of exhibits will cover maintenance in all its aspects.

"The steady trend toward automation and automatic production processes in industry has resulted in a shift of emphasis in engineering," said Saul Poliak, producer of the show. "The principal responsibility of the plant engineer is now that of keeping the automatic machinery running. . . . The man who used to operate the machine now maintains it. Thus automation and automatic processes have succeeded in cutting production costs while opening up a new field for further cost reduction, that of maintenance."

Fort Worth Sand and Gravel Company Builds Fully Automatic Plant

New Quigley Setup Replaces Oldest Operation

AFTER recently razing its old plant ½ mile south of Highway 183 at Hurst, Tex., the Fort Worth Sand and Gravel Company constructed and placed in operation at the same location what is said to be the newest and most modern sand and gravel plant in the Southwest. The new Quigley operation replaces the oldest and largest of the company's four plants, which are within six miles of each other along the Trinity River bottom north of Fort Worth.

The above-ground construction of this completely automatic plant is predominantly of steel channel and welded tubing. There are seven main structural components at the plant site, including a receiving hopper, a classifying tower, two screening towers, a reclaiming tunnel, and loading bins.

At the pit, three 1½-cu. yd. Northwest Model 6 diesel draglines are used in working the deposit, which consists of approximately equal quantities of sand and ¼- to 3-in. gravel. The same machines are used for stripping overburden. The material is loaded into three 22-ton bottom-dump Euclid trucks and hauled to the plant site, where it is dumped on a rail grizzly mounted over a 24- by 36-ft. concrete receiving hopper of 120 cu. yd. capacity.

From the hopper, 245 t.p.h. of sand and gravel is fed to the classifying tower of the plant on a 30-in. by 245-ft. conveyor. The belt on this unit travels at 375-f.p.m. At the head end of the conveyor, the raw feed is discharged on the scalping screen—a Cedarapids 3- by 8-ft. double-deck horizontal vibrating unit which scalps plus 3-in. material on the upper screen.

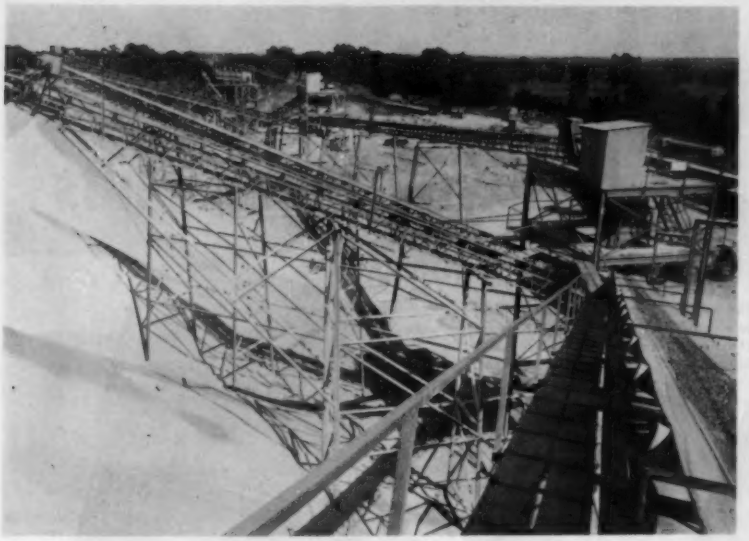
Bottom deck discharge from the scalper is fed for processing to an 8- by 20-ft. Telsmith revolving screen which has a 4-ft. scrubber section. Water for washing and separation is pumped into the head end of the screen at the rate of 750 g.p.m. An inside barrel of ⅜-in. diameter round perforation screen allows minus ⅜-in. material to fall on the outside woven wire sand jacket, from which it can be removed to flow to the water scalping tank. Finer material passing through the sand jacket is also discharged into the 10- by 20-ft. Eagle water scalping tank. Excess water is here removed, undesirable sizes are disposed of, and fines are retained through a large settling area. These settled fines are discharged through gates to a pair of Eagle fine material screws—one 36-in. single and one 30-in. double—where they are rewashed and drained. Water is applied at the rate of 100 g.p.m. to the sand from the scalping tank for rewash. From the discharge ends of these screws, the sand is carried on a 24-in. conveyor belt to the stockpile.

Coarse material from the Telsmith screen is fed to a 36-in. by 24-ft.

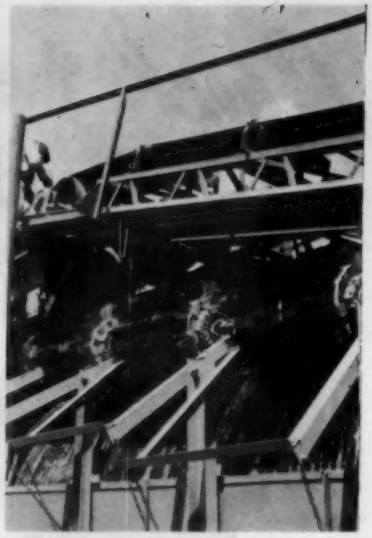
(*Continued on page* 114)

Looking down along the conveyor toward the classifying tower at the Fort Worth Sand and Gravel Company's new Quigley plant.

A log washer breaks up clay, soft stone and conglomerated rock, using 100 g.p.m. of water.



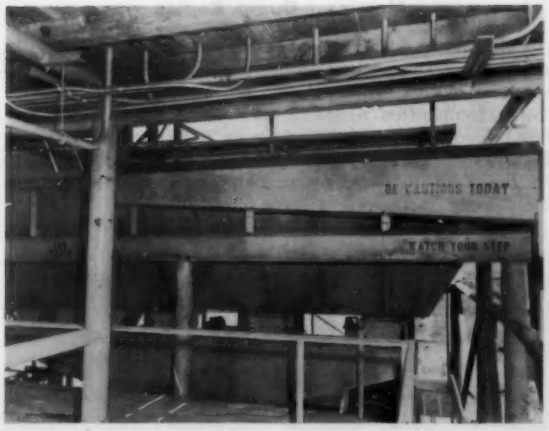
Another view of the operation, showing conveyors and the general plant arrangement. The No. 2 screening tower is in the foreground (right).



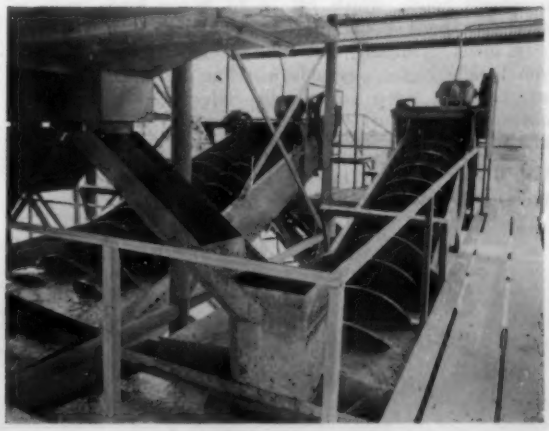
A revolving screen with a sand jacket having 1/8-in. openings.

A crane equipped with a 1½-cu. yd. dragline loads one of the plant's three 22-ton bottom-dump trailer trucks.

The 4- by 10-ft. double-deck sizing screen on the No. 2 screening tower.



This 20-ft. triple-flume water scalping tank removes excess water, classifies the material, and retains fines.



The 36-in. single and 30-in. double fine material screws which wash, dehydrate, and discharge the sand.

Check the advantages of these big Gar Wood off-highway dump units

16 to 26-ton capacity
The new outside-mounted Gar Wood telescopic hoists lick old problem of chassis interference, permit hauling bigger payloads within load limits.

25 to 30-ton capacity
New twin 8" and 10" Gar Wood arm-type hoists, with dual or triple lift arms, provide extra strength and stability for off-highway hauling.

Before you buy any dump unit for *off-highway* hauling, it will pay you to look into the performance advantages of the new *heavy-duty* Gar Wood hoists and bodies, mounted on standard 4 or 6-wheel chassis.

Of special interest are Gar Wood's *outside-mounted* twin telescopic hoists, which lift 16 to 26-ton loads, with a maximum hoist weight of only 2400 lbs. This, together with lower mounting and better weight distribution, let you handle bigger payloads with far greater safety over rough roads, steep grades, etc. Side-mounted trunnions automatically adjust telescoping sleeve cylinders without interfering with chassis cross-members.

You'll also want to investigate the *extra heavy-duty* Gar Wood arm-type hoists (Models 2825 and 2025) which give you *70° dump angle* for fast clean-out. Both types feature unit construction of double (or triple) lift arms with a heavy boxed cross-head. This eliminates "one-sided" lifting strains, even during hillside dumping.

Matching Dump Bodies

All Gar Wood off-highway hoists are available with a full range of matching dump bodies, *custom-built for your particular needs.* (Types GX-2S 311 and 312 illustrated). Long, trouble-free hydraulic performance is assured by Gar Wood's famous 10-tooth gear pump which permits higher rpm with lower oil pressure... is easily repaired in the field by average mechanic and standard truck tools. Send for complete facts today.

GW-H-9

GAR WOOD GW INDUSTRIES

GAR WOOD INDUSTRIES, INC.

Wayne, Michigan — Richmond, Calif.

WORLD'S LARGEST MANUFACTURER OF HOISTS AND DUMP BODIES FOR TRUCKS AND TRAILERS.

18 Solutions to Your Power Problems

INTERNATIONAL Power Units give earthmoving equipment years of new productivity with dependable, low-cost power.

DIESEL

UD-1091, 190 hp. @ 1400 rpm
Disp. 1090.6 cu. in., 6 cyls.

UD-18A, 125 hp. @ 1600 rpm
Disp. 691.1 cu. in., 6 cyls.

UD-525, 115 hp. @ 1800 rpm
Disp. 524.9 cu. in., 6 cyls.

UD-14A, 76 hp. @ 1400 rpm
Disp. 460.7 cu. in., 4 cyls.

UD-350, 75 hp. @ 1800 rpm
Disp. 349.9 cu. in., 4 cyls.

UD-264, 55 hp. @ 1800 rpm
Disp. 263.9 cu. in., 4 cyls.

CARBURETED

U-1091, 200 hp. @ 1600 rpm
Disp. 1091.6 cu. in., 6 cyls.
(natural gas & LPG only)

U-450, 110 hp. @ 2200 rpm
Disp. 450.9 cu. in., 6 cyls.

U-406, 98 hp. @ 2200 rpm
Disp. 405.9 cu. in., 6 cyls.

U-372, 91.5 hp. @ 2200 rpm
Disp. 372 cu. in., 6 cyls.

U-282, 75.5 hp. @ 2400 rpm
Disp. 282.5 cu. in., 6 cyls.

U-240, 64 hp. @ 2400 rpm
Disp. 240.3 cu. in., 6 cyls.

U-220, 62 hp. @ 2400 rpm
Disp. 220.5 cu. in., 6 cyls.

U-9, 55 hp. @ 1500 rpm
Disp. 334.5 cu. in., 4 cyls.

U-264, 52 hp. @ 1600 rpm
Disp. 263.9 cu. in., 4 cyls.

U-164, 36.5 hp. @ 1800 rpm
Disp. 163.6 cu. in., 4 cyls.

U-2A, 24 hp. @ 1800 rpm
Disp. 113.1 cu. in., 4 cyls.

U-1, 16.5 hp. @ 2500 rpm
Disp. 59.5 cu. in., 4 cyls.

These are the 18 INTERNATIONAL *Power Units that save dollars for contractors by bringing them a full measure of economical power all the time. Each unit is the result of more than 50 years of research, engineering, and manufacturing know-how. That's why* INTERNATIONAL *Power assures more production at lower cost for earthmovers.*

Whether you specify power for new equipment—or repower a crane, a dragline, a crushing plant, or a shovel—or replace a small auxiliary engine—INTERNATIONAL Industrial Power can give you the right-size unit for the job.

You choose from 18 carbureted and diesel models, ranging from 16.5 to 200 net horsepower, each engineered to give you long years of higher production per horsepower and trouble-free operation.

If you've had experience with those tough INTERNATIONAL crawlers, you know how INTERNATIONAL engines stand up in rough going, cost less to operate. Leading equipment manufacturers power their products with INTERNATIONALS—the units designed to pay off on heavy-duty work.

Your nearby INTERNATIONAL Industrial Power Unit Distributor or Dealer is a good man to know. He'll help you choose the right INTERNATIONAL replacement engine to lick your power problems, and he'll back it up with factory-trained service and parts. See him today for the full story.

INTERNATIONAL HARVESTER COMPANY, CHICAGO 1, ILLINOIS

INTERNATIONAL HARVESTER

INTERNATIONAL®
INDUSTRIAL POWER

MAKES EVERY LOAD A PAYLOAD

Full traction while turning. This photo shows the Turbo-Dozer building up a load with the bowl tilted back in the "dig" position. As the weight of the load increases, it bears down on the cutting edge. If there's a tendency for the front wheels to rise, the operator "feathers" the hydraulic lift-control. This action transfers the weight onto the front wheels, pulls them down firmly on the ground without lifting the bowl. Note the rear wheel steering—full traction while turning.

Exclusive power-tilting bowl. The powerful double-acting tilt cylinder is visible in this photo. The operator controls the angle of the bowl from the cockpit; he can tilt the bowl back and forth 33 degrees between "dig" and "float" while travelling. Also visible is the hub of the Clark axle; final planetary reduction takes 70% of the torque load off the shafts.

Special bowl features. Two 1½ in. holes are bored in the Turbo-Dozer's bowl for fast mounting of pusher plate. Both ends of the bowl are fitted with vertical cutting edges which are interchangeable. End bits are also interchangeable, and can be reversed when the corners are worn. The C-frame is extra-heavy-duty, and a swinging drawbar is standard equipment.

Report on the MICHIGAN TURBO-DOZER:

New dozer features 27 mph speed, power-tilting bowl, rear-wheel steer

The new 2¾ yd. capacity Michigan Turbo-Dozer combines rubber-tired speed and mobility with outstanding traction and power. Its turbocharged diesel engine develops 165 hp, with maximum rimpull of 28,000 lbs.—plenty of power for heavy dozing, push-loading and land clearing. And at 27 mph, it will run rings around any dozer on the market!

Power-tilting bowl. A powerful double-acting hydraulic cylinder tilts the bowl back and forth through a 33 degree arc. You can change the angle of the bowl from "dig" to "float" as you travel—work the cutting edge back and forth under stumps and boulders to uproot them. Two 6-inch lift cylinders give you tremendous lifting power and down-pressure—you can raise the cutting edge from 24¼ inches below ground level to 43¾ inches above.

High flotation tires, oscillating axle. Big 18.00-25 low pressure tires (nearly 7-foot tread) give the Turbo-Dozer excellent ground contact in dry, wet or sandy footing. You can cross railroad tracks or travel along the ties or road bed; you can climb curbs and drive safely on any kind of road surface. On uneven terrain, the steering-drive axle oscillates to keep both rear wheels in firm contact with the ground. With 14½ inches of ground clearance underneath, it's practically impossible to get "hung up".

Full traction while turning. The Turbo-Dozer gives you full tractive effort even in a turn. *All four wheels are always driving,* except when you declutch the rear axle for highway travel. Rear-wheel steering eliminates unnecessary tire wear—you don't brake or drag your inside wheels on a turn.

On land clearing, you can doze a load downhill, turn it into a tight spot—and still have full power to pull yourself out with your wheels cramped the way you went in. If one wheel begins to slip, a locking differential automatically applies power to the wheel with the firmest footing. Power steering is standard—you can steer with one hand!

Power-shifting, 300% torque multiplication. Clark's exclusive power-shift transmission eliminates the conventional engine clutch and foot pedal—the most notorious cause of excessive maintenance and operator fatigue. With two fingertip levers on the steering column, the operator can instantly shift between High-Low and Forward-Reverse —even when moving in either direction.

The 3-to-1 Clark torque converter gives you a steady power flow, regardless of speed. As the load gets heavier, the torque output automatically increases up to 300% at stall speed—gives you the extra torque to plow through the toughest spots. You can't stall the engine, and there's no clutch to slip.

Top speed 27 mph. The new Turbo-Dozer is 50% faster than any other rubber-tired dozer, four times faster than the average crawler. It dozes faster and travels faster, which means it will give you faster cycles going and coming. You can economically send the Turbo-Dozer on its own power to handle jobs many miles away, and you can cover more ground on any given job. But speed isn't the whole story. Once the Turbo-Dozer arrives at the site and starts to work, *it's got the muscle to do the job!*

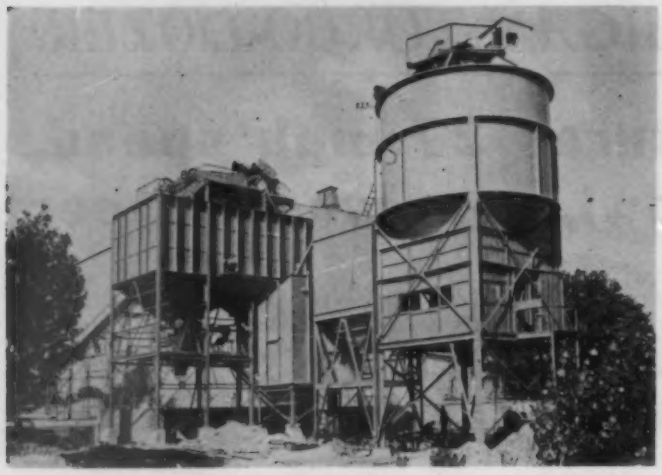
Prove it for yourself. The new Michigan Turbo-Dozer gives you faster cycles and more yardage in every shift—more dollars of profit every day. Ask your local Michigan distributor to prove it, with an on-the-job demonstration; or write direct for detailed specifications. The Turbo-Dozer is available on the low-cost Michigan Lease Plan: no down payment, pay as it produces!

Powerful "pry-out" action. To uproot stumps and boulders, you hook the cutting edge underneath and work the bowl back and forth. As this happens, the hydraulic system automatically diverts some of the engine power from the wheels to the bowl action. In effect, you transfer just enough power to eliminate wheel spin, yet you still maintain a strong crowding action as you pry the obstacle out.

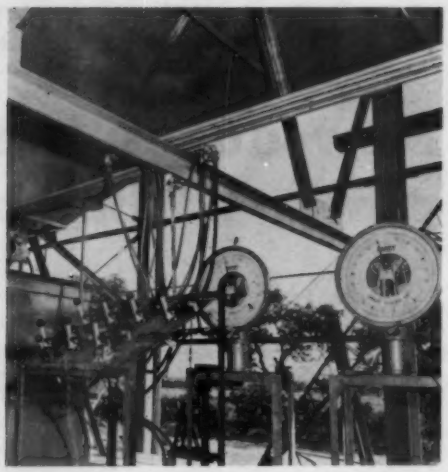
MICHIGAN is a trade-mark of Clark Equipment Co.

CLARK EQUIPMENT

CLARK EQUIPMENT COMPANY
Construction Machinery Division, 450 Second Street
Benton Harbor 35, Michigan



Quigley also has a ready-mixed concrete plant with a 350-ton aggregate bin and an 800-bbl. cement bin.



The control board for the automatic weighing and loading equipment.

Fort Worth Sand-Gravel

(*From page* 108)

Eagle log washer and a 24-in. double coarse material screw. Approximately 60 t.p.h. of plus 1-in. material goes into the log washer, where insoluble clays, soft stone, and conglomerate are thoroughly broken down or scoured, and rinsed by adding water at 100 g.p.m. The balance of coarse aggregate—minus 1-in.—is fed to the double screw, where water at 300 g.p.m. is also applied for rinsing.

A 204-ft. conveyor belt carries gravel from the classifying tower to the No. 1 screening tower, where sizing of the aggregate begins. Discharged onto a 4- by 10-ft. double-deck shaker screen, the gravel is separated into three sizes: minus 3-in., plus 1¾-in., and throughs. Retained material is conveyed to the stockpiles located above a reclaiming tunnel. The minus ¾-in. gravel is conveyed to the No. 2 screening tower, where it is discharged on a 4- by 10-ft. Tyler double-deck screen and is again separated to three sizes: ¾- to ½-in., ½- to ¼-in., and ¼-in. to No. 8. These materials are then conveyed to the stockpiles, which contain approximately 70,000 cu. yd. when full.

The reclaiming tunnel beneath the stockpiles is a reinforced concrete structure, 535 ft. long and 6- by 6-ft. in cross section. Air-operated bin gates are located every 10 ft. to permit the loading and blending of different types of material to meet any required specifications. Capable of carrying its load at the rate of 369 f.p.m., the tunnel conveyor is 570 ft. long and projects approximately 65 ft. beyond the mouth of the tunnel. At this point it discharges onto another belt which carries the material to a height of 65 ft. at the top of the loading bin. The latter is a 650-ton bin, 40- by 20-ft., with 8-compartments. Although sand is fed directly into appropriate compartments, the gravel is run through a rinsing screen where it is re-rinsed with water at 700 g.p.m.

All rail shipments are loaded from bin gates with retractable chutes on the sides of the bins. Truck loading is handled through two 11-cu. yd. weigh hoppers suspended individually from two 25,000-lb. Hardy dial scales. All bin gates and discharge chutes are air-controlled from a central point, and processed material can be loaded out in trucks at the rate of 175 to 200 cu. yd. per hour.

Safety Contest Winners

(*From page* 104)

Bethel dry-bank, Estate of Bernard J. Dolan, Bethel, Conn., 23,106 man-hours.

Dresden No. 2 dry-pit, The Zanesville Gravel Co., Dresden, Ohio, 22,055 man-hours.

Plant "AS" dry-bank, The Buffalo Slag Co., Inc., Alfred Staton, N. Y., 22,-040 man-hours.

Plant No. 15 dredge, Lyman-Richey Sand and Gravel Corp., Columbus, Nebr., 21,782 man-hours.

Plant No. 23, dredge, Lyman-Richey Sand and Gravel Corp., Bridgeport, Nebr., 21,593 man-hours.

Olympia No. 125 dry-pit, Pacific Coast Aggregates, Inc., Felton, Calif., 21,-431 man-hours.

Venango dry-bank, Industrial Silica Corp., Utica, Pa., 20,971 man-hours

Waterloo No. 1 dredge, C. W. Shirey Co., Waterloo, Iowa, 20,837 man-hours.

South Bend dry-pit, South Bend Sand and Gravel Corp., South Bend, Ind., 20,426 man-hours.

Morris No. 1 dredge, Material Service Corp., Morris, Ill., 18,566 man-hours.

Wilton dry-pit, Hudson Valley Sand and Stone Co., Wilton, N. Y., 17,816 man-hours.

Plant "C" dry-bank, The Buffalo Slag Co., Inc., Cattaraugus, N. Y., 17,119 man-hours.

Yolo No. 131 dry-pit, Pacific Coast Aggregates, Inc., Yolo, Calif., 16,498 man-hours.

Plant "F" dry-bank, The Buffalo Slag Co., Inc., Franklinville, N. Y., 16,364 man-hours.

Prattco No. 109 and Lapis No. 110 dredge, Pacific Coast Aggregates Inc., Marina, Calif., 16,286 man-hours.

Corrigan dry-pit, Texas Construction Material Co., Corrigan, Tex., 16,200 man-hours.

West Alexandria dredge, Steiner's Sand and Gravel Co., West Alexandria, Ohio, 15,717 man-hours.

Schmidt wet-pit, Riverside Gravel Co., Schmidt, N. D., 15,630 man-hours.

Garfield dry-pit, Utah Sand and Gravel Products Corp., Garfield, Utah, 14,-834 man-hours.

Beacon Falls dry-bank, The Grasso Construction Co., Beacon Falls, Conn., 12,370 man-hours.

East Peoria dry-pit, Peoria Concrete Construction Co., East Peoria, Ill., 12,280 man-hours.

Brilliant wet-pit, Brilliant Sand Co., Brilliant, Ohio, 11,296 man-hours.

Camden wet-pit, White Gravel Co., Camden, Ohio, 11,119 man-hours.

Sand Springs dredge, Arkansas River Sand Co., Sand Springs, Okla., 10,-174 man-hours.

Follansbee dry-bank, The Brilliant Sand Co., Follansbee, W. Va., 9,360 man-hours.

Hollimon wet-pit, Texas Construction Material Co., Hollimon, Tex., 7,920 man-hours.

Shelton dry-bank, The Grasso Construction Co., Shelton, Conn., 6,498 man-hours.

South Bethlehem dry-bank, Albany Gravel Co., Inc., South Bethlehem, N. Y., 2,434 man-hours.

DRILLING 70′ TO 80′ OF 3″ HOLES PER HOUR IN HARD LIMESTONE, ON 7 GALLONS OF FUEL: Marble Cliff Quarries, one of Ohio's largest, is using this Jaeger Rotary 600 on these two quarry rigs with 4″ drills and air tugger hoists to drill 19′ holes of 3″ final diameter in hard flux limestone. Because of the constant, unfluctuating 100 lbs. pressure maintained by the Jaeger Rotary, each drill averages 350′ to 400′ per 10-hr. day. The compressor never runs faster than 1600 rpm, with a resulting minimum of wear and fuel consumption of only 7 gph.

Jaeger offers a fully efficient rotary "600"

In more than a year of use, on all types of big air work, the Jaeger Roto "600" has demonstrated two outstanding advantages over other rotary compressors. (1) *It operates at slower speeds,* resulting in lowest fuel consumption and longest life of engine and compressor. (2) It maintains 100 lbs. minimum pressure under all normal operation, *as smooth as steam.* Speed modulation is stepless over the entire operating range, and so instant-acting as to prevent any over-run and racing of engine. Controls are also extremely simple.

Jaeger also offers more efficient oil cooling, closer control of engine water temperature, elimination of cold weather "dry starts", 8-hour fuel tanks, wrap-around bumpers and many other advantages. For complete information, see your Jaeger distributor or send for Catalog JCR5.

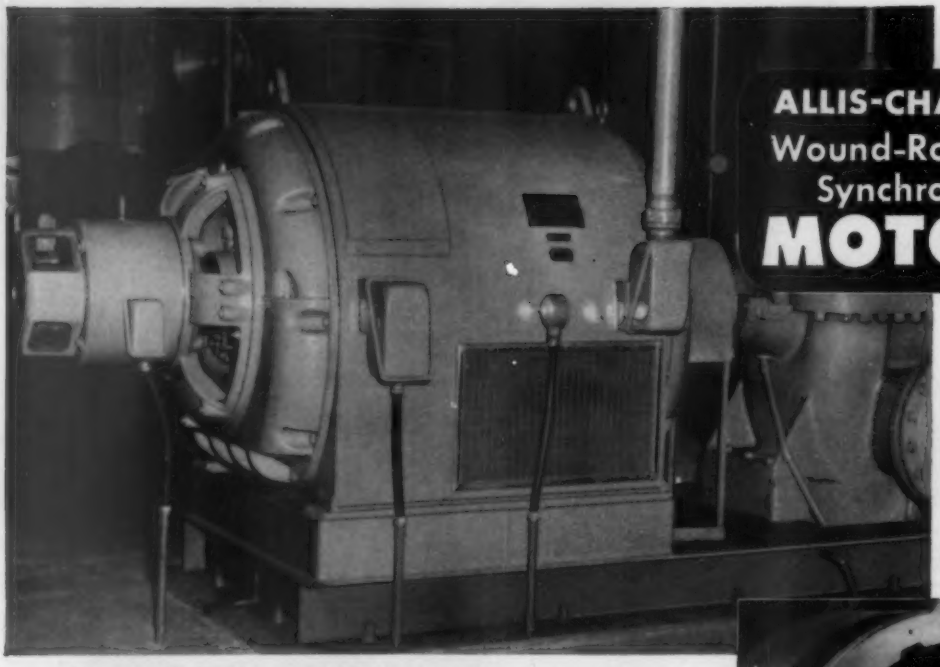
Jaeger Roto "600"

Model "125" rotary is also available for smaller work.

THE JAEGER MACHINE COMPANY

602 Dublin Avenue, Columbus 16, Ohio

PUMPS • LOADERS • MIXERS • TRUCK MIXERS • PAVING MACHINES



ALLIS-CHALMERS
Wound-Rotor and Synchronous
MOTORS

Shown is a 400-hp, 900-rpm end-shield bearing synchronous motor. Other Allis-Chalmers motors of this design are available from 250 hp at 300 rpm and up, in drip-proof and splash-proof construction.

Now full protection without loss of accessibility

All parts, including slip rings and leads, are enclosed — yet removable inspection covers and end-shield sections simplify maintenance.

These motors combine modern functional design with maximum protection and accessibility.

Here are some of the important features:

- Collectors and brushes are protected by box-type stator yoke from physical damage, dripping moisture, dust and dirt.
- Cast end shields provide rigid bearing support and full protection for motor windings.
- Slip-ring leads are brought out to a terminal box — they are not left exposed.
- Capsule-type sleeve bearings permit inspection or cleaning of motor windings without exposing interior of bearing to dirt.
- Access covers are secured by easy-operating, self-locking fasteners for ready removal.

Get details — Call your nearby A-C office, or write Allis-Chalmers, Power Equipment Division, Milwaukee 1, Wisconsin. Ask for Bulletin 05R8183.

Note accessibility offered by generous size opening covers. Upper half of end shield is removable for entrance to motor winding.

A-C ALLIS-CHALMERS

ALLIS-CHALMERS

A-4847

1105...YES, ELEVEN-O-FIVE

is the new-strength wire in Roebling's

Royal Blue

WIRE 1105 ROPE

AS SIZES and constructions go, Royal Blue is like the ropes you have used until now... but the likeness ends there.

Royal Blue is made of Roebling's new 1105 wire, the strongest, toughest wire developed up to now for use in any wire rope.

Royal Blue Wire Rope is as enduring as the wire from which it is made.

Write us for full facts on the all-steel Royal Blue Wire Rope, or contact your Roebling distributor.

ROEBLING

Subsidiary of The Colorado Fuel and Iron Corporation

JOHN A. ROEBLING'S SONS CORPORATION, TRENTON 2, N. J. BRANCHES: ATLANTA, 934 AVON AVE. • BOSTON, 81 SLEEPER ST. • CHICAGO, 5525 W. ROOSEVELT RD. • CINCINNATI, 3253 FREDONIA AVE. • CLEVELAND, 13225 LAKEWOOD HEIGHTS BLVD. • DENVER, 4801 JACKSON ST. • DETROIT, 915 FISHER BLDG. • HOUSTON, 6216 NAVIGATION BLVD. • LOS ANGELES, 5340 E. HARBOR ST. • NEW YORK, 19 RECTOR ST. • ODESSA, TEXAS, 1920 E. 2ND ST. • PHILADELPHIA, 230 VINE ST. • SAN FRANCISCO, 1740 17TH ST. • SEATTLE, 900 1ST AVE. S. • TULSA, 321 N. CHEYENNE ST. • EXPORT SALES OFFICE, 19 RECTOR ST., NEW YORK 6, N. Y.

Industry Personalities

Texas Industries, Inc., has announced that E. C. JANCIK has been named manager, B. J. ALEXANDER, general sales manager, and W. D.

E. C. Jancik

B. J. Alexander

ROSENBERG JR. the new production manager of the Texcrete Company of Houston and the Texas Lightweight Aggregate Company.

Mr. Jancik was formerly sales manager for Texas Lightweight Aggregate Company, and Mr. Alexander had been sales manager for the Texcrete Company, Dallas. Mr. Rosenberg was previously with other Texas Industries operations in Dallas and Corpus Christi.

WILLIAM E. WILLEY has been appointed state highway engineer for the Arizona Highway Department. GEORGE E. LANG has been reassigned to the position of state maintenance engineer. J. S. MILLS was named assistant deputy state engineer, office and planning, and WILLIAM JOHNSON was moved into Mr. Mills' former position, that of engineer of contracts and specifications.

The following changes in supervision at the Marquette Cement Manufacturing Company's Superior, Ohio, and Rockmart, Ga., plants have been announced by Frank Moyle, vice-president and director of operations:

J. M. DOWDY has returned to Superior after an absence of nearly a year on special assignment at Marquette's Ogleby, Ill., plant. At Superior he will assume the duties of superintendent, a post to which he was originally appointed on January 1, 1954.

HENRY L. RESTARICK, who substituted for Mr. Dowdy at Superior, has been named superintendent at Rockmart.

J. C. BENNETT, who has been serving as superintendent at Rockmart, will return to his regular duties on Mr. Moyle's technical staff in Chicago after a brief stay at the company's Cowan, Tenn., plant.

The board of directors of the St. Lawrence Cement Company have announced the appointment of the Honorable Senator PAUL H. BOUFFORD, Quebec City, as director of the company.

JOHN M. POMEROY, vice-president in charge of the Thomaston, Maine, plant, was elected a director of the Dragon Cement Company, Inc., at a meeting of the board of directors held July 22, 1955.

B. J. STEGER, auditor of The France Stone Company, Toledo, Ohio, has been elected first vice-president of the Toledo Control of the Controllers Institute of America.

At the annual meeting of the organization's San Francisco Control, MERRILL J. FERREE, controller, Granite Rock Company, Watsonville, Calif., was chosen to serve on the board.

One of the new directors of the local controllers' group in Seattle, Wash., is KENNETH A. STOTLER, secretary-treasurer, Pioneer Sand & Gravel Company of that city.

American Potash & Chemical Corp. has announced the appointment of CLAY WAGGONER as chief chemist at the new San Antonio plant of American Lithium Chemicals, Inc., in which American Potash & Chemical owns 50.1% interest.

JOHN H. DAVIES has been named sales engineer for the Fort Worth Sand and Gravel Company, Fort Worth, Tex., according to an announcement by George Meihaus, vice-president in charge of sales. Mr. Davies was formerly with the State Highway Department.

RAPHAEL J. JANER has been appointed general traffic manager of Penn-Dixie Cement Corporation, succeeding D. S. (TED) BROWDER, who is retiring after 27 years with the firm.

Mr. Janer joined Penn-Dixie in 1952 as assistant traffic manager after having had wide experience in the traffic field. His headquarters will be in New York City.

Model 6-C Austin Overshot Loader with grizzly screen loading pit run gravel

AUSTIN OVERSHOT LOADERS

dig, screen and load in one low-cost operation

The Austin Loader, with grizzly screen attachment, scoops up as much as 4 cubic yards of gravel—then, as the Loader raises overhead and dumps, correctly sized material drops through the screen into the truck. Oversize rolls off the screen, beyond the truck. Austins also screen and load riprap, coal and other coarse materials quickly and economically.

Increase your production . . . cut your labor costs and eliminate the need for separate screening equipment . . . use Austin Overshot Loaders to screen and load material on your job.

Austin Overshot Loaders are available in 5 models for installation on Caterpillar D2, D4, D6, D7 and D8 Tractors. Bucket capacities from 1 to 4 cubic yards. AA-1006

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Proved in mines and quarries everywhere, U. S. Royal Cord Hose offers extremely high hydrostatic value, with a minimum of contraction and elongation. And with its great flexibility, shear resistance and toughness, it can be run over repeatedly by heavy equipment without harm.

Recommended particularly for applications where shock and excessive pressures are met, U. S. Royal Cord is available in continuous lengths from any of our 27 District Sales Offices, or by writing to the address below. *Whatever* your hose requirement, you'll find it pays to turn to "U. S." There's a job-engineered U. S. Hose for practically every purpose—an expert staff of "U.S." engineers to assist you in your hose selection.

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* tube of high quality neoprene for maximum oil resistance.
* braided cotton breaker ply anchors tube to carcass lastingly.
* Exclusive. Two counter-spiralled plies of tough special cord floated in resilient rubber for outstanding strength, shear resistance and flexibility.
* tough, brown natural rubber cover gives excellent cut and abrasion resistance—protects unique construction under extreme service conditions.

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THE CLEVELAND VIBRATOR COMPANY

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EMMETT J. NORRIS, credit manager and assistant treasurer of Calaveras Cement Company, recently was presented with a gold watch in honor of his completion of 25 years of service with the company.

Mr. Norris began with Calaveras as an accounting clerk in 1930, advancing to chief accountant and then to assistant treasurer. He was the company's enrollee in the executive development program of the Stanford University School of Business last year.

WILLIAM B. PORTERFIELD JR., has resigned as assistant sales manager of the United States Potash Company to become vice-president and sales manager of the National Potash Company.

WILBUR KIER has been appointed plant engineer for the Ideal Cement Company plant at Superior, Nebr. Mr. Kier was formerly process engineer at Wichita for the O. H. Sutton Corporation.

D. J. MCGANNEY, vice-president of Southern Pacific Company, was recently elected to the board of directors of the Ideal Cement Company, Denver, Colo.

Mr. McGanney will fill the vacancy created by the retirement of J. A. MCCARTHY, who concluded at retirement almost exactly 50 years in the cement industry. Mr. McCarthy was one of the founders of the Old Mission Portland Cement Co., San Juan Bautista, Calif. In 1939 he became president of Pacific Portland Cement Company, which included Old Mission and Beaver Portland, before becoming vice-chairman and a director of Ideal in 1952.

Mr. McGanney, who is a native of California, first joined the staff of Southern Pacific in 1911 and has been active in the conduct of its operations since that time.

RAYMOND MAREK has been appointed credit manager in the Des Moines, Iowa, headquarters of the Hawkeye-Marquette Cement Company. He will fill the vacancy created by the death of H. R. Merrick, who had been the firm's secretary and treasurer. Mr. Marek was formerly credit manager in the Jackson, Miss., sales office of the parent company, the Marquette Cement Manufacturing Company.

CLARENCE H. GREGORY will succeed Mr. Marek at Jackson. Until this promotion Mr. Gregory had been assistant to the Jackson division sales manager, H. W. Graupner.

HENRY E. WESSEL has joined the Engineering Division of International Minerals & Chemical Corporation as assistant to the vice-president. Mr. Wessel had been associated with the Midwest Research Institute, Kansas City, Mo., since 1952.

CHARLES E. MARSHALL, general manager of the Fort Worth Sand & Gravel Company, Fort Worth, Tex., has been placed in charge of operations for all of the Texas Industries Inc., plants. The latter firm acquired Fort Worth in 1953.

FRANK E. MCCASLIN, president of the Oregon Portland Cement Company, has been reappointed for the third year as chairman of the Natural Resources Committee of the U. S. Chamber of Commerce.

ROSCOE C. HILDEBRANDT was recently appointed by the Portland Cement Association to the position of structural field engineer for its Seattle, Wash., office.

Mr. Hildebrandt is a graduate of the University of Washington with a B.A. degree in civil engineering. He was previously with the Seattle Engineering Department for 4½ years.

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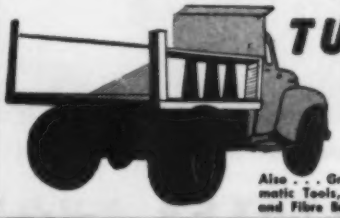

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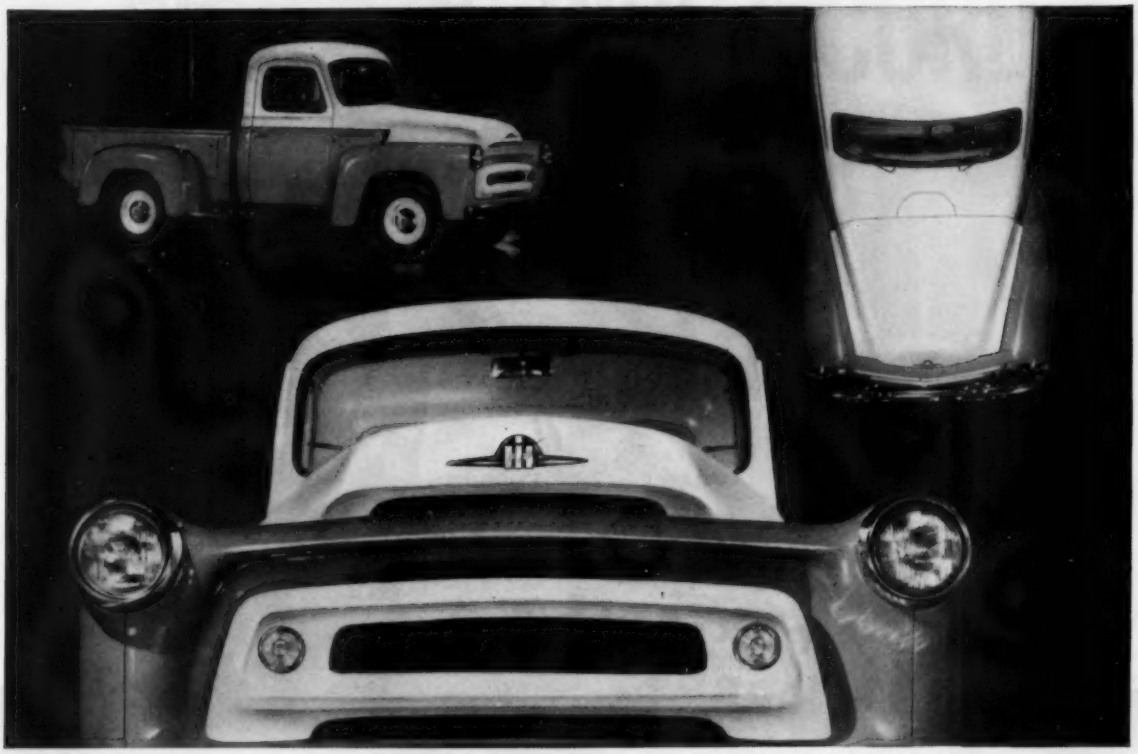

New INTERNATIONAL "S-line" includes light, medium and heavy-duty models from 4,200 to 33,000 lbs. GVW, with 10 gasoline and LPG engines, every modern truck feature.

Functionally styled for practical good looks!

Here are the new INTERNATIONALS . . . a great new truck line from *any* point of view! Their clean-lined styling is trim and functional — designed to take the rough going of truck work without excessive repair costs.

Driver designed for real comfort!

They give you real comfort, too! They're driver-designed to let you work longer without fatigue. Loaded with performance and handling features that make hauling jobs easier.

More usable horsepower for BIG money savings!

These great INTERNATIONAL trucks offer more horsepower — develop their power for sustained operation at lower, more economical engine speeds. They're *all truck* with no passenger car engines or components asked to do a truck job. That saves you the BIG money — the over-the-years operating and maintenance money. Drive them today, at your INTERNATIONAL Dealer or Branch.

You relax in REAL comfort in Comfo-Vision cabs. Comfort-angled steering wheel. Low hood for closer view ahead. "Quiet-ride" roof lining, draft-free doors. Choice of 24 solid and optional two-tone exteriors. Optional deluxe cabs have color-keyed interior, chrome trim.

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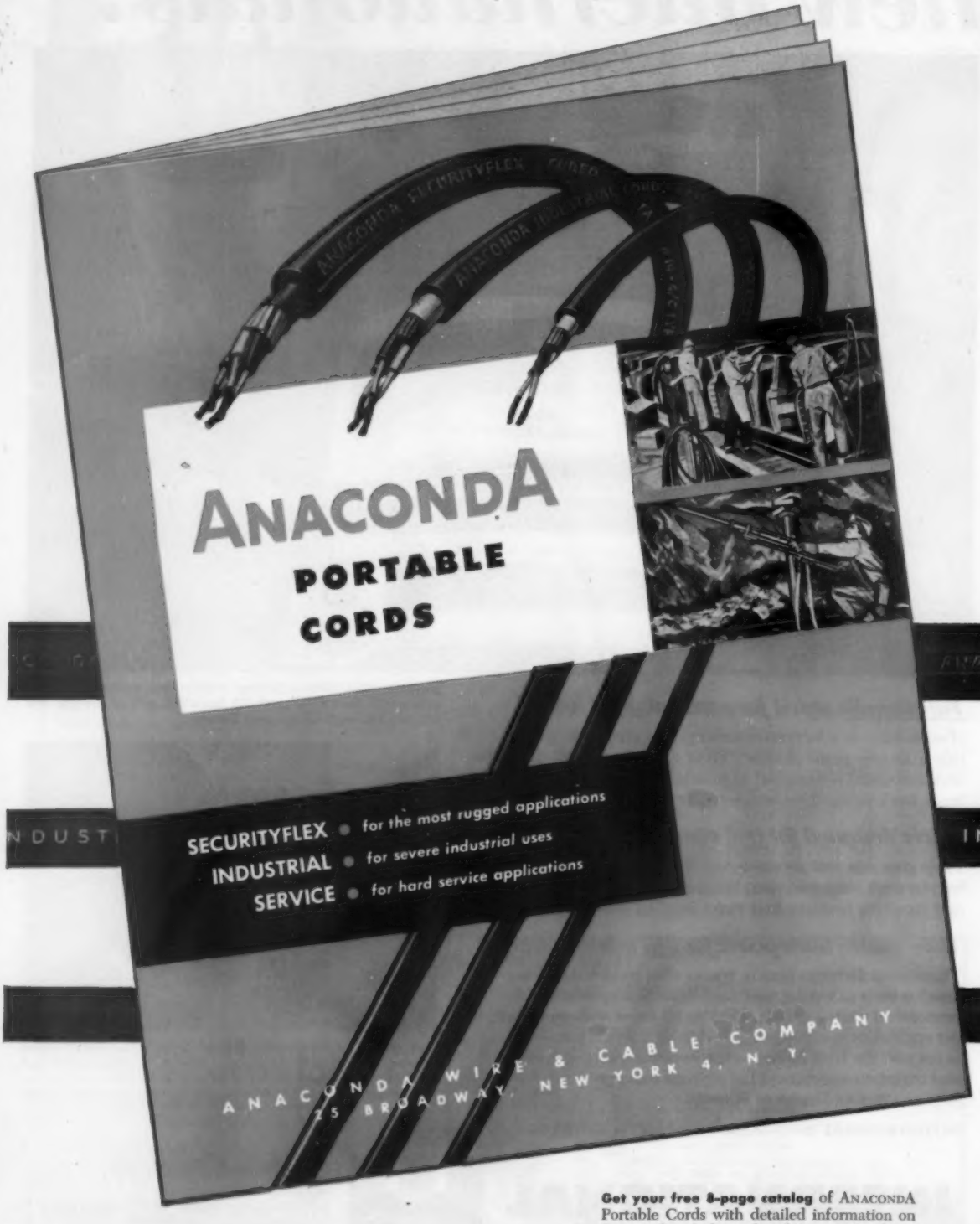
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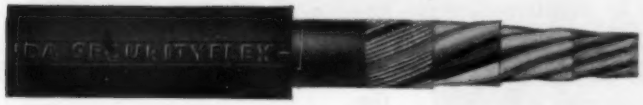
Severe applications . . . Hard usage . . . Standard service – Anaconda brings you 3 new engineered cords designed with the exact physical properties needed for each type of job—strength, flexibility and resistance to wear!

Select the cord *best suited* to your needs—based on good engineering and sound economics.

Whichever cord you choose, the Anaconda trademark is your assurance of *premium performance.*



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SECURITYFLEX* CORDS for severest conditions. Toughest, sturdiest cords made . . . used where strength and wear-resistance are a "must." Neoprene jacket *mold-cured in lead* gives top crush, abrasion- and oil-resistance. Cords pay for themselves with long life under severest conditions—in mines, railroads, docks, and in heavy industrial use. Look for the molded-in name, "Securityflex!"

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INDUSTRIAL CORDS for heavy industrial conditions and *maximum flexibility.* Lower in cost. Specially designed for use in heavy industry—where cords are in continuous operation and must be tough, flexible, oil-resistant. Tough neoprene jacket. Many industrials stock this one cord for use in virtually all applications . . . reducing inventory problems and costs. Look for the Anaconda marking on jacket.

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SERVICE CORDS for regular duty. Lowest in cost . . . yet have many features found only in higher priced cords of other makes. Special rubber jacket withstands abuse and moisture. Outstanding for appliances, office machines, portable tools—where flexibility and long life are needed.

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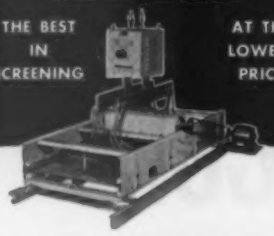

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WRITE FOR NEW CATALOG No. 150.

UNIVERSAL VIBRATING SCREEN CO.
Racine, Wisconsin
Quality Screens Since 1919

Obituaries

JOHN D. HYSONG, Chicago district sales manager for Basic Refractories, Incorporated, in Cleveland, Ohio, died in Pittsburgh on July 23

Mr. Hysong joined Basic Refractories in 1942 as service engineer. Prior to that time he had served in various capacities in the open-hearth at Carnegie-Illinois Steel in Homestead, Pa., and later at Braddock, Pa., as first helper and as melter foreman. In 1941 he became open-hearth rail and heat inspector for the R. W. Hunt Company in Pittsburgh.

Mr. Hysong had been active to within a week of his untimely death. He was born in Swissvale, Pa., and received his college training at the University of Pittsburgh.

FRANK L. BASS, 63, chief chemist of the Keystone Portland Cement Company, Bath, Pa., died unexpectedly on August 21.

Mr. Bass had a long career in the cement industry, having served as chemist or chief chemist with Vulcanite, Edison, and Capitol, before joining Keystone over 25 years ago.

RAY FOSTER, manager of the Lime Department of the Winnipeg Fuel & Supply Company, Winnipeg, Canada, recently passed away. His duties have been assigned to Frank Pearson.

EDWIN A. RUSSELL, 66, vice-president and a director of the Philadelphia Quartz Company, Philadelphia, Pa., died on June 27 at a local hospital. He had been associated with the firm since 1918.

ARTHUR F. GOTTRON, 54, treasurer of the Gottron Brothers Company, a sand and gravel concern at Fremont, Ohio, died July 8, after an illness of six months.

L. F. (ROY) HEMMERT, 72, Sidney, Ohio, died on June 24 at his home. He had been in ill health for the last year. Mr. Hemmert had been a salesman for the National Lime and Stone Company, Findlay, Ohio, for the last 25 years.

HIRAM W. BARNES, 66, sales manager for Dolomite Products Co., died May 24 at his home after a six month illness. He was a former president of the New York State Crushed Stone Association and was a member of the New York Bituminous Concrete Producers Association.

HERBERT R. MERRICK, 61, secretary-treasurer of the Hawkeye-Marquette Cement Company, died unexpectedly recently following a heart attack at his home near Des Moines, Iowa.

Mr. Merrick joined the former Hawkeye Cement Company in 1923 in the auditing department. Shortly after Hawkeye Cement was purchased in 1940 by the Marquette Cement Manufacturing Company, he became secretary-treasurer of the present firm.

CHARLES HARVEY, superintendent of the Missouri Gravel Company, LaGrange, Mo., for 30 years, died at his home on August 14.

DAVID BURNETT SCOTT died of a heart attack at his home in Altadena, Calif., on June 20. Until his retirement in 1952, he had been western sales manager for American Potash & Chemical Corp. for 18 years.

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2. TRIM WITH TORCH

3. SELECT WING-DING

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reduce welding time to a minimum—
REBUILD WORN TEETH
...the modern...quick...easy way with—
MANGANAL
T.M. Reg. U.S. Pat. Off.
CAST 11%-14% MANGANESE-NICKEL STEEL
WING-DING
Individual Slip-Overs

- Replace worn metal faster.
- Eliminate hard-to-make welds in deep Vee.
- Plug welds, through holes in wings, give extra strength.
- Nine individual casting sizes to fit every size tooth.
- For stronger welds attach with MANGANAL FLO-KOTE, SPECIAL TITE-KOTE or BARE WELDING ELECTRODES. Weld deposits easily cut with torch when tooth is repointed again.

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American Cable
TRU-LAY VHS
15% Stronger

Dragline Gives 57% More Wear

Draglines take a real beating in the coal stripping operations of the C B & M Coal Company, Plains, Pennsylvania. Used for removing over-burden, the best Improved Plow Steel draglines lasted 525 hours. When new TRU-LAY VHS draglines were used they established service records of 825 hours—57% better than Improved Plow Steel.

FOR SLUSHER ROPES, SHOVEL HOIST ROPES

TRU-LAY VHS was specially developed for use as draglines, slusher ropes, and shovel hoist ropes—the toughest applications in the mining field. It is 15% stronger than Improved Plow Steel which, up to now, has been the best grade procurable. This extra strength enables you to handle heavier loads with the same diameter line—gives a higher factor of safety during the entire period of service.

TOUGHER WIRE—LASTS LONGER

New VHS is made of tougher, more wear-resistant wire. This pays off in longer service under the gruelling conditions that slusher ropes, draglines and shovel hoist ropes encounter.

REDUCES DOWN-TIME—CUTS COST

New VHS adds extra strength, toughness and wear resistance to the advantages of Preformed construction. Because it lasts longer and reduces "down time" for rope replacement, TRU-LAY VHS costs less to use. This has been proved in carefully kept records of field tests on slusher ropes, draglines and shovel hoist ropes.

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New TRU-LAY VHS is at your American Cable distributor, *now*. See him, or write to the nearest American Chain & Cable Company office listed at right for **Brochure DH-489**

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Legal Decisions

By LEO T. PARKER
Attorney at Law
Cincinnati, Ohio

New Law of Contracts

One of our readers recently asked what legal rule or formula can be applied to decide whether or not a sale contract is valid and enforceable. After reviewing over 100 leading higher court decisions, we compiled this article, which is intended to convey legal information from which laymen can decide whether or not a contract involving nonmetallic materials is valid or void.

Unconditional Acceptance

First, it is important to know that a sale contract is valid if either of the contracting parties submitted an offer which the other party definitely and unconditionally accepted. Stating the law in a different way: If one party submits a proposition or offer, the contract is not completed nor enforceable until the other party *unconditionally* accepts the offer. Only an unconditional acceptance can result in a valid contract.

In a leading higher court case, for example, a buyer and a seller of crushed stone signed a written contract. By the terms of this contract the seller shipped the materials for which the purchaser had agreed to pay by a check on a named bank. The seller shipped the materials specified in the contract, but he requested the purchaser to pay a draft through a bank different from the one named in the contract.

The higher court promptly held that the purchaser could without any liability rescind the contract and refuse to accept and pay for the merchandise. The higher court explained that the seller's deviation from the terms of the original contract was equivalent to a *conditional* acceptance of the original offer made by the purchaser.

In another case a purchaser submitted an offer to a seller to purchase a specified quantity of materials to be shipped on October 15. The seller accepted the offer with the explanation that the shipment would be made on October 16.

The higher court held that no valid contract was made because the seller had not unconditionally accepted the purchaser's offer.

Must Be Honest

Modern higher courts consistently hold that if either party to a contract practices legal fraud, the contract can be cancelled without obligation by the other party.

If a purchaser desires to cancel a contract because of fraud, he must prove that the silence, acts, language, or concealment of the other party was a false representation, or a concealment of something which he should have in good faith imparted to the purchaser. Also, the testimony must show that the fraud was unknown to the purchaser before he made the contract, and that the fraud was known by the seller when or before the contract was completed.

Therefore, if a seller intentionally or by design misrepresents material facts, or produces a false impression in order to mislead a purchaser, or to cheat him or to obtain an undue advantage over him, that is fraud. Misrepresentation may be accomplished by deeds, acts, or by artifices to mislead by positive assertions, or by failure to impart the truth. Also, any coercion, undue influence, duress, threats, or the like by which a party induces another to sign a contract results in a void contract.

Quite obviously, a purchaser may without liability rescind a contract if the testimony shows that the seller breached a warranty.

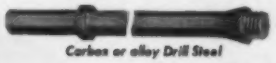
For illustration, in *Witte v. Cooke Tractor Company,* 261 S. W. (2d) 651, the testimony showed facts, as follows: One Witte is an excavating material and hauling contractor. He sued the Cooke Tractor Company, a dealer in excavating equipment. The basis for the law suit arose over Witte's contention that he explained to the sales manager of the Cooke Tractor Company that he was in the wrecking and excavating business, and was in the market to buy a machine; that he needed equipment which would really do the type of work necessary; that in his type of work with competition, etc., he always figured a capacity of around 600 cu. yd. a day on a ½-cu. yd.

TWO FEET A MINUTE
in southern granite with ROK-BITS and drilling machine

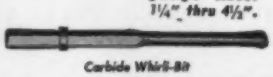
Carbide Rok-Bits® and the Travel Drilling Machine make a combination hard to beat. Drilling blast holes on secondary work, this team does in one minute what it takes hand-held air drills to do in 6 minutes. What a boost for profits! Rok-Bits' unique NON-RIFLING balanced design minimizes steel breakage—reduces bit replacement costs. Why accept less? Write plant nearest you for details. Request bulletin B-1.

Intra-Set Drill Steel—cross or chisel types—gauge sizes: 1⅛" thru 2¼".

Carbide Rok-Bits—cross or chisel types—gauge sizes: 1¼" thru 4½".



Carbon or alloy Drill Steel



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TIMKEN® carbide insert bits give more hole per bit through blocky granite on Granite Falls Fishway

THE Scheumann & Johnson Company of Seattle had to drill blast and dowel holes in extremely hard, seamy granite when constructing baffles for the world's largest "vertical-baffle" salmon fishway at Granite Falls, Washington. For highest economy drilling through this hard ground, they chose Timken® *carbide insert* bits for the job.

Timken carbide insert bits permitted high speed drilling with minimum bit changes. And the job superintendent reports that the Timken carbide insert bits made it possible to drill out full increments of drill steel.

But Timken carbide insert bits may not be the best answer for *all* your drilling problems!

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Timken threaded multi-use rock bit

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your best bet for the best bit ... for every job

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Again Marion leads the way with major hoist improvements, including a new leakproof seal.

The seal is a combination iron ring plus special underseals that more nearly than any other ring mechanism eliminates creeping. Actual tests carried on with a full body load showed virtually no creeping in 48 hours.

Other major improvements on Models 621-A2, 721-A2 and 726-A2 include outside body guides . . . increased flexibility in the sub-frame without loss of strength . . . increased clearances at base of cylinder, making it easier to service valve and pump.

Here is another example of Marion's leadership and advanced designing. Get all the facts from your nearby distributor or write direct today.

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MARION BODIES AND HOISTS

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A complete line of standard and special hydraulic hoists and dump bodies to fit every need.

crane; that he needed a machine which would dig from 560 to 600 cu. yd. a day (from 125 to 150 truckloads), working on an 8-hour schedule.

Witte also testified that the sales manager recommended an X crane. He said that the X crane was "faster than anything on the market . . . that it would dig 150 loads or better a day . . . that it would outperform any ½-yard machine that was on the market; would run rings around" anything else on the market.

Witte used the crane for several weeks. In fact, he used the machine and equipment on 55 separate jobs on 133 different days, during which the machine was actually in use 972 work hours. Then Witte's attorney wrote the Cooke Tractor Company that the crane was unsatisfactory and rescinded the contract of sale, offering to return the crane and equipment.

The higher court held in favor of Witte, holding that Witte was entitled to rescind the contract and recover from the Cooke Tractor Company the purchase price of the equipment.

The court said: "We have concluded that plaintiff's (Witte's) evidence makes out a case of oral express warranty that the crane would load 150 truckloads or better per day authorizing recovery under the general allegations of express warranty contained in the petition. A statement that a machine is of a certain capacity may constitute a warranty to that effect. The statement that the crane would dig and load 150 truckloads or better a day was a positive affirmation or representation of a fact and not a mere expression of opinion, and meant that the crane was capable of loading the stipulated number of trucks in an ordinary 8-hour day, when properly used and handled."

For comparison, see the following cases, in which the courts held that the sellers breached guarantees that equipment will produce certain results. In *Cosgrove v. Bennett,* 20 N. W. 359, the contract provided that a roller machine has a "capacity of 100 bbl. per 24 hours."

In *Chamberlain Company v. A. C. M. Company,* 51 Cal. App. (2nd) 520, the representation was that a pumice sifter would grade 2 tons per hour of dry pumice at 98½ percent efficiency.

In *Sauerman & Ball v. Simmons,* 74 Ark. 563, the statement was made that a pump would lift water 35 ft. on a straight lift.

In all of these cases the higher

FORT WORTH SAND AND GRAVEL CO. V. P. CHARGE OF SALES, GEO. A. MEIHAUS, SAYS:

"Radio saves us $10.00 a day per truck"

Chief radio dispatcher Coy Anderson gives instructions to a driver miles away.

Mixer driver Alvin E. Hobbs has just received instructions to proceed directly to his next job without going back to plant.

From his mobile repair van J. A. Markham talks directly to drivers, often diagnoses trouble so driver himself can make emergency repairs.

READY MIX OPERATORS:

HERE IS CONSTANT CONTROL OF 51 TRUCKS OPERATING BETWEEN 5 PLANTS

Diverting trucks as needed to handle the output of five separate mixing plants was a king-size job. But Motorola 2-way radio has reduced it to everyday routine for the Fort Worth Sand and Gravel Co. of Texas.

Constant radio control—every minute of the day—of every one of the 51 mixers has resulted in a *saving* of about 20% in mileage per yard of delivered concrete. Drivers get their new orders *at the job site*, and usually go *directly* to the next job without needless travel. Radio actually gets an *extra hour* of bonus production daily from every truck.

Besides speeding delivery and giving better customer service, Motorola 2-way radio has cut costs many other ways. Overtime of drivers and batch plant personnel has been slashed at Fort Worth. Telephone "hunting" by drivers has ended . . . reports are sent and orders received right in the cab. One radio equipped service van does the work of two . . . speeding repair and cutting down-time.

Five supervisors, out most of the time in their radio equipped cars, have instant contact with the main office. Meihaus says his company wouldn't be without 2-way radio now.

Find out how Motorola 2-way radio can pay for itself quickly by cutting costs for *you*, and go on to earn extra profits month after month. A Motorola Engineer will show you how. Write, phone or wire—TODAY!

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Motorola consistently supplies more mobile and portable radio than all others combined.
Proof of acceptance, experience and quality.
The only COMPLETE radio communications service—specialized engineering . . . product . . . customer service . . . parts . . . installation . . . maintenance . . . finance . . . lease.
"The best costs you less—specify Motorola."

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This placer dredge with 18 cu. ft. buckets digs to 125' below water, averages better than 22 hours running time daily. Intricate treatment equipment on board limits digging to only 18,000 tons of gravel per day. For sand and gravel digging only, an 18 cu. ft. YUBA dredge can produce as much as 40,000 tons daily.

5¢ Per Ton

YUBA gold dredges or other bucket ladder dredges of this type can be converted to dig and screen sand and gravel at operating costs substantially under 5¢ a ton. Equipment for more extensive sizing, scrubbing or other separation processes can be installed to finish products at costs per ton comparable with the low costs on dredges used in the mining industry.

Another big advantage — YUBA dredges float in their own ponds and excavate gravel without lowering surrounding water levels.

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With YUBA dredges you get both low production costs and long operating life—many YUBA dredges are operating efficiently after 25 years or more of rough service.

Consult YUBA NOW. We will design and build a new dredge to fit your ground; or help you find a used dredge, and move, redesign and rebuild it. Wire, write or call us—no obligation, of course.

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63

courts held that if the purchased equipment would not produce as warranted by the seller, the purchaser could rescind the contract and recover the full purchase price. In some instances the courts held the sellers liable in damages to the purchasers.

Mutual Obligations

Another rule is as follows: A contract is valid only if both parties were mutually obligated to perform one or more acts of benefit or detriment to the other. Also, a contract is void if it violates a state or city or other law.

In other words, a contract must have valid consideration, which means that both parties must agree to perform some act or do something for the other party, and the contract must not violate any law. For instance, a contract is void which provides that a seller will sell certain merchandise but does not also state that the purchaser will purchase the merchandise.

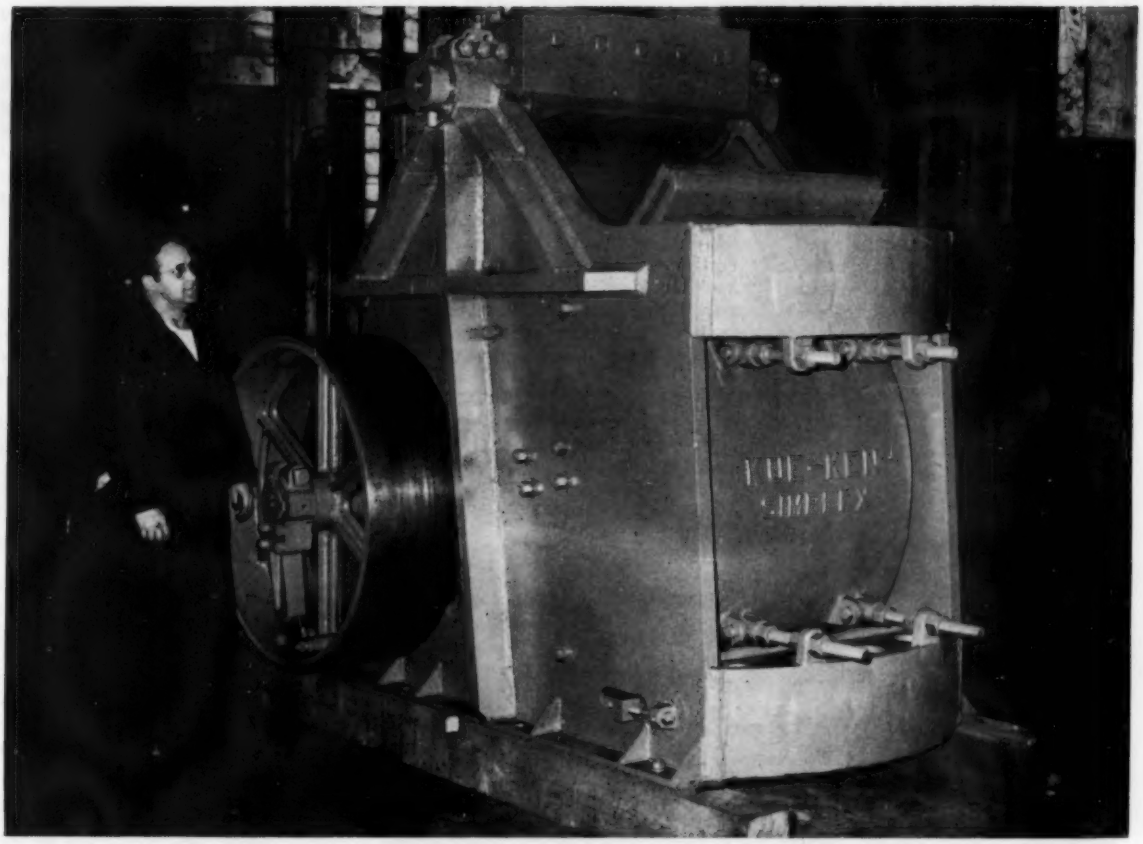
According to a late leading higher court decision, a corporation is not required to pay for materials which its officials did not order, although tickets acknowledging receipt of such materials were signed by officials of the corporation. This is so because there is no mutual obligation.

For example, in *Jacobson-Lampkin Paving Company v. M. Concrete Company,* 277 Pac. (2d) 122, the testimony showed facts, as follows: The seller, a corporation, was engaged in the paving business. Its main activities were confined to paving streets. Later the Jacobson-Lampkin Paving Company sold and conveyed all of its assets to the Kay Construction Company. The Kay Construction Company agreed to take over and complete the paving contracts then held by Jacobson-Lampkin Paving Company for paving streets.

The M. Concrete Company sold materials for paving these streets, and its books showed that the various materials appearing in the invoice were charged to the Jacobson-Lampkin Paving Company. Also, employees of the paving corporation signed tickets acknowledging delivery of materials by the M. Concrete Company for paving projects.

In subsequent litigation the higher court held the Jacobson-Lampkin Paving Company not liable for payment of the materials used on these paving projects, and said:

"The only issue here involved is as to whether defendant (Jacobson-Lampkin Paving Company) is liable



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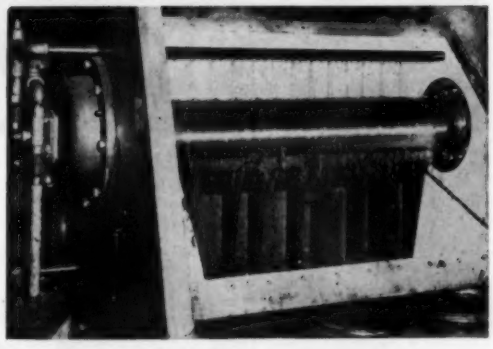

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Armstrong Whitworth (Metal Industries) Ltd., Authorized Licensed Manufacturer and Distributor. Close Works, Gateshead-upon-Tyne 8, England

for the material delivered by plaintiffs (M. Concrete Company). We do not think the evidence is sufficient to establish liability against this company. The burden of proof was certainly upon plaintiffs (M. Paving Company) to show that the paving company had in some manner contracted with them for the purchase of the material in question before it would be entitled to judgment against it. In our opinion plaintiffs have failed to establish that any such contract had ever been entered into."

This higher court explained that the Jacobson-Lampkin Paving Company was not liable although the same persons owned the stock in this corporation and in the Kay Construction Company, which used the materials delivered by the M. Concrete Company to the paving company. In this respect the court said:

"The issue here involved is not as to whether either or both of the corporations might have been held liable for debts existing against the paving company at the time it transferred its assets to the Kay Construction Company. The real issue here involved is as to whether the paving company is liable for material sold and delivered subsequent to the time the Kay Construction Company acquired such assets. As above pointed out, the plaintiffs failed to offer any evidence tending to establish that the paving company contracted for or ordered any of the material in question, but on the contrary the undisputed evidence shows that such material was ordered on behalf of the Kay Construction Company."

For further comparison, in a leading higher court decision the testimony showed that a man named White owed Brown $3,000. A man named Willis wanted to employ White, but White would not accept employment until Willis made arrangements with Brown to forestall suit to collect the $3,000. Willis and White made an agreement by which White agreed to employ Willis if Willis would pay or settle the $3,000 debt due Brown. Therefore, Willis and Brown entered into a contract, properly dated and signed, as follows: "I, A. W. Willis, hereby agree to pay to C. W. Brown $3,000 owed by White to Brown."

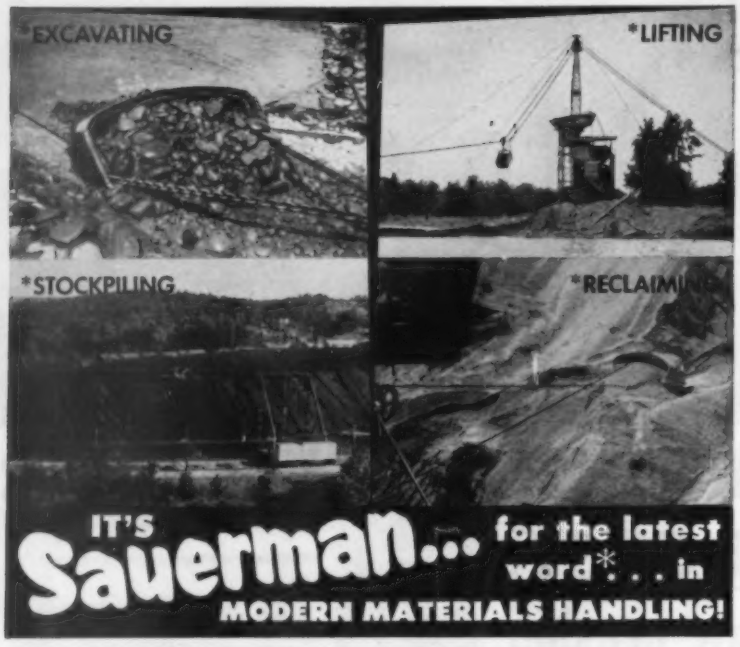
The court held the contract not valid because it was not based upon either mutual obligations or "good consideration". This is so because Brown had not given any "consideration" to Willis for assuming the obligation to pay the $3,000. Therefore, Brown could not collect the $3,000 from Willis, as he had recently attempted to do in a New York court.

On the other hand, the courts hold that if one person promises to do something for the other, who also promises to do something, that is valid consideration and results in a valid contract.

Of course, if the object of the contract is illegal, the contract is void; also, it is void if it violates any law. For illustration, a contract relating to real property is void unless, as required by the law in all states, it is in writing. Also, a contract is void by which a person guarantees an account or payment of a debt of another person, unless the contract is in writing.

For illustration, if one Atkins said to a seller: "Let Jones have merchandise worth $600 and I will pay you," this contract is valid because Atkins is personally assuming the obligation to pay. However, suppose Atkins says: "Let Jones have merchandise worth $600; if he does not pay you, then I will." This is a surety contract, and it must be in writing; otherwise it is always void.

All other contracts which violate any laws are void and unenforceable.



Upper left: 4-cu. yd. Crescent Scraper excavating from a river bottom, brings in a load of stone with very few fines for a western sand and gravel company.

Upper right: 2-cu. yd. Slackline Cableway spanning an average of 450 feet, lifts and conveys from an underwater deposit to a high hopper at the rate of 75 tph.

Lower left: 8-cu. ft. scraper machine is stockpiling 300 tons per hour, over an arc of 450 feet radius in a 225,000-sq. ft. storage area. Tail tower is remotely controlled from elevated cab above hopper.

Lower right: 2-cu. yd. Crescent working between a fixed point head and movable tail tower, reclaims phosphate from all points about the periphery of a roughly semi-circular storage area.

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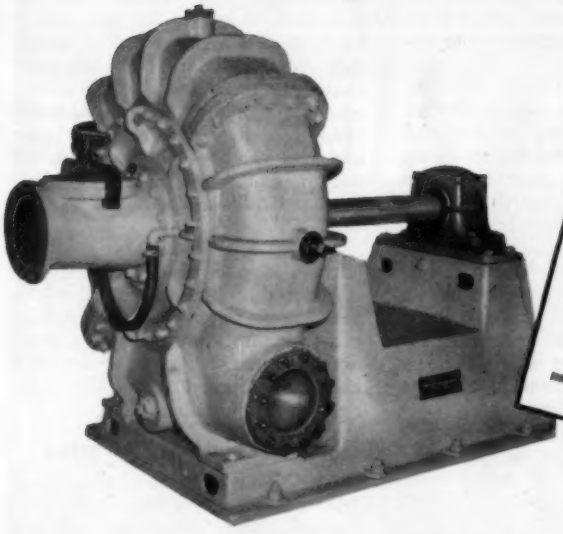

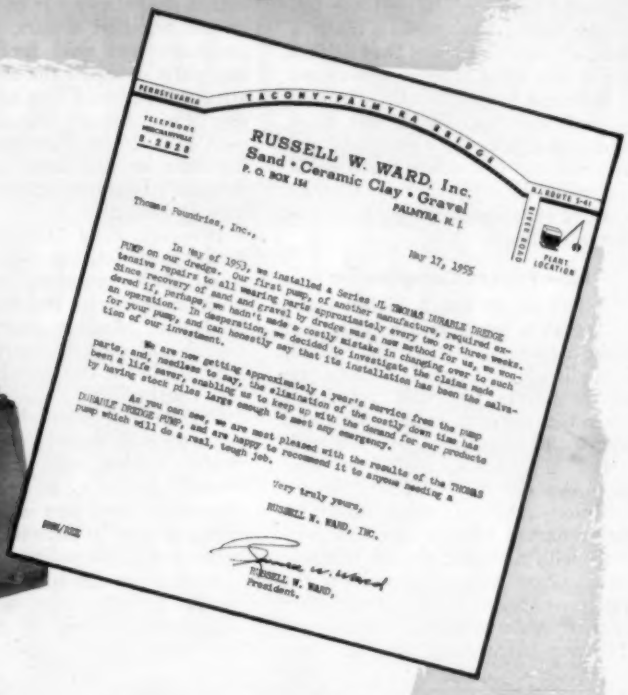

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PLANT LOCATION

May 17, 1955

Thomas Foundries, Inc.,

In May of 1953, we installed a Series JL THOMAS DURABLE DREDGE PUMP on our dredge. Our first pump, of another manufacture, required extensive repairs to all wearing parts approximately every two or three weeks. Since recovery of sand and gravel by dredge was a new method for us, we wondered if, perhaps, we hadn't made a costly mistake in changing over to such an operation. In desperation, we decided to investigate the claims made for your pump, and can honestly say that its installation has been the salvation of our investment.

We are now getting approximately a years service from the PUMP parts, and, needless to say, the elimination of the costly down time has been a life saver, enabling us to keep up with the demand for our products by having stock piles large enough to meet any emergency.

As you can see, we are most pleased with the results of the THOMAS DURABLE DREDGE PUMP, and are happy to recommend it to anyone needing a pump which will do a real, tough job.

Very truly yours,

RUSSELL W. WARD, INC.

RUSSELL W. WARD,
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RWW/EEE

OUR THOMAS PUMP—*a real "life saver"*

WE WILL RECOMMEND IT TO ANYONE!

No small wonder Mr. Ward is pleased with the results of his THOMAS DURABLE DREDGE PUMP — it meant the difference between success and failure of his new dredging operation for recovery of sand and gravel.

Mr. Ward's first pump (of another manufacture) required extensive and costly maintenance repair to all wearing parts about every 2 or 3 weeks — seriously affecting his operation.

NOW he gets approximately ONE YEAR'S SERVICE from Thomas Pump parts and he so eliminated costly down-time that his investment is now completely secure.

Mr. Ward is happy . . . and so are we to have been able to help him. We can help you in the same way, if you are pumping sand and gravel with a pump of conventional design and materials.

Wearing parts of Thomas Pumps are made of modern, abrasion resisting alloyed NI-HARD. Its advantages in longer life, increased production, reduced repair costs and down-time are so impressive that they are actually hard to believe.

Read what Mr.Ward says in his letter. He is one of the many users who have had the same profitable experience with a THOMAS PUMP.

If you are interested in a pump which will do a real tough job of work — investigate today what the THOMAS DURABLE DREDGE PUMP will do for you.

You can't buy a more durable pump than a "Thomas" for sand and gravel — you can't buy one that will make you as much money.

THOMAS FOUNDRIES, *Incorporated*

P.O. BOX 1111 . . . . BIRMINGHAM, ALABAMA

The courts hold that a contract is void and unenforceable which is intended to suppress competition. See *Kass v. Kogod,* 186 Fed. (2d) 763. Here the testimony showed the following facts: Two persons made a contract which specified that neither would operate a competing business in the same general locality. In subsequent litigation, the higher court held that although one party violated its contract, the other party could recover no damages since the contract was one to suppress competition, and therefore illegal.

Law Favors Compromise

A few weeks ago a higher court held that a buyer and a seller can make a compromise agreement which is binding on both parties, unless one of the parties was guilty of fraud when the compromise agreement was signed, or before the same was signed.

For illustration, in *Mesmer v. Johnson,* 122 N. E. (2d) 711, the testimony showed these facts: A buyer named Mesmer signed a contract with a dealer, named Johnson, to purchase a diesel shovel for the purchase price of $37,000. After making a down payment of $6,000 Mesmer became dissatisfied about the condition of the shovel in relation to warranties made by Johnson. Thereafter the parties signed another contract in which Johnson agreed to reduce the balance due of $31,000 by several hundred dollars, which the purchaser had paid for accessories and parts to repair the shovel. Soon after this contract was signed, Mesmer again became dissatisfied and sued Johnson for damages, contending that he had been induced by Johnson's fraud to sign the compromise agreement.

However, since Mesmer failed to prove that Johnson was guilty of fraud, false promises, or deceitful misrepresentations the higher court held that Mesmer must keep the shovel and pay the purchase price specified in the compromise contract. The court said:

"While more comprehensive definitions may be found for the phrase 'fraud', it is here sufficient to say that 'fraud' applies to an agreement inhibited by law—one which the law says shall not be entered into on the ground of public policy. Surely there is nothing in the law which forbids parties to enter into an agreement compromising their differences growing out of the sale and purchase of the described shovel. Indeed, it must be said that the law favors such agreement if entered into fairly and without fraud inducing its execution."

Misrepresenting Merchandise

This legal question frequently arises: If a seller misrepresents to a purchaser the quality or model of merchandise, what damages can the purchaser recover from the seller? Last month a higher court answered this question, holding that the purchaser can recover at least the difference between the value of the merchandise delivered to the purchaser and the value of the merchandise misrepresented by the seller. See *Collier v. Bankston-Hall,* (267 S. W. (2d) 900.

Also, a few weeks ago a higher court rendered an important decision to the effect that a seller who practices fraud is liable to the purchaser for not only the actual damages sustained by the purchaser, but also for additional or punitive damages if the jury so decides.

Parties Must Be Obligated

The higher courts hold that a contract must specify definitely the obligations of both parties; otherwise the contract is unenforceable. Nothing should be indefinite. A contract for the sale of merchandise, materials, and the like should specify every important thing such as price, quality and quantity, services to be rendered, etc.

If, for example, a contract simply states the price, such a contract is invalid because the quality of the merchandise and kind of services is omitted. On othe other hand, a recent higher court held that if the buyer and seller had previously transacted business, a contract is valid which merely explains that similar quality of merchandise shall be furnished. The contract was held valid because the court could, by referring to the previous contract, definitely determine the quality and the price of the merchandise.

Law of Voidable Contracts

Some kinds of contracts are voidable by only one of the contracting parties.

Modern higher courts consistently hold that a contract is *void* when made by an insane person; but the contract is *voidable* only if made by a minor. A voidable contract is one in which only one of the parties has the sole privilege to decide whether the contract shall be enforceable. The common classifications of void-

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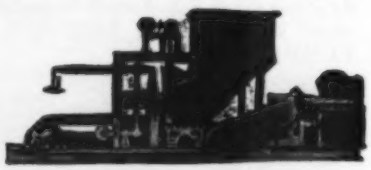

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But, if something does go wrong, your call to the Seco factory is met with an all-out effort to rush parts to you the same day by plane, train or motor carrier, whichever will reach you fastest. We maintain a complete stock of standard replacement parts for all models of Seco Vibrating Screens made and machined to our exacting high standards of quality and dependability.

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able contracts are those which have been induced by one party by fraud, undue influence, or misrepresentation. However, if a minor makes a contract with a seller of nonmetallic materials, he may compel the latter to fulfill it, or he may cancel it, as he desires.

In this connection, we may consider the following legal question: If a seller knows that a person who orders merchandise is a minor, can the seller avoid responsibility by making a contract with an adult who acts for the minor?

According to a late higher court decision the answer is yes, but the minor can rescind the contract, nevertheless.

For example, in *Woolridge v. Hill*, 114 N. E. (2d) 646, an employer of a 17-year-old boy purchased certain equipment and delivered it to the boy. The agreement between the employer and the boy was that the boy was to repay the employer a certain amount each week and upon completion of full payments the boy was to receive the title to the equipment from his employer. The boy gave the employer $400 and thereafter made weekly payments aggregating $130. In the meantime the employer held the legal title to the equipment. Six months later the boy took the equipment back to his employer and demanded return of the $530 he had paid. The higher court held that the employer must refund to the boy the full $530.

This court also held that the seller who sold the equipment to the boy's employer had no liability because the purchase money was paid by the adult employer who took legal title.

Law of Payment

Another legal question frequently asked is the following: If a seller makes a contract to supply materials, and the contract does not state when the purchaser will pay the account, when is the money due?

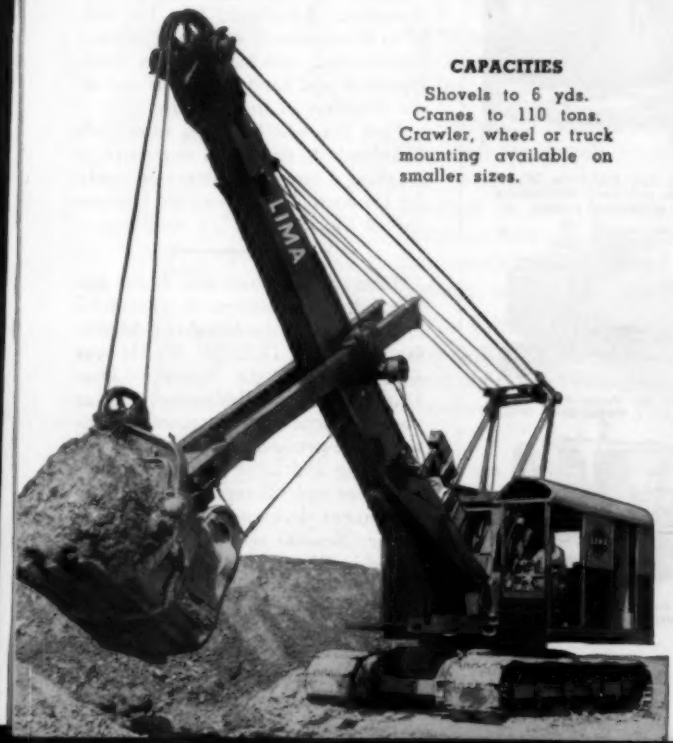
As to payments, the higher courts hold that if a contract does not specify whether the purchaser shall have credit or pay cash, the law always assumes that he will pay cash. In other words, a purchaser can have no credit unless the contract clearly stipulates the credit terms.

On the other hand, if the contract specifies credit and stipulates when the account will be paid, this is valid. If the purchaser fails to make the payment as agreed, the seller can sue and recover a judgment for the full amount due.

LIMA'S new Electric Power Unit eliminates stalls, won't burn out

LIMA's new optional power unit matches, *electrically*, diesel-torque converter performance. It combines an AC motor with a single stage torque converter to adapt actual power output to work load demand—at constant motor speed. Thus, you get power on demand through a wide operating range . . . and the motor will not stall or burn out in heavy load operation.

Just check the performance curves —— They make it clear that LIMA's new electric power unit is the perfect answer when your job calls for electrically powered machines. The new unit is available on every LIMA machine. It will pay you to get the full story today from your nearby LIMA distributor . . . or write: Construction Equipment Division, Baldwin-Lima-Hamilton Corporation, Lima, Ohio.



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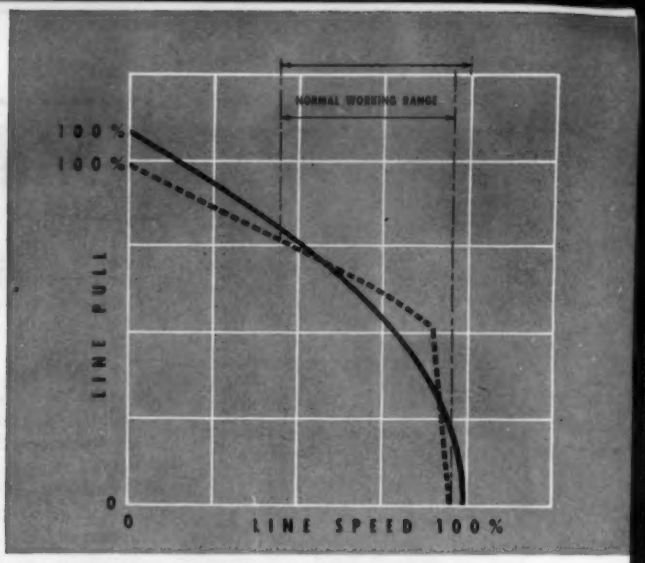
Shovels to 6 yds.
Cranes to 110 tons.
Crawler, wheel or truck mounting available on smaller sizes.

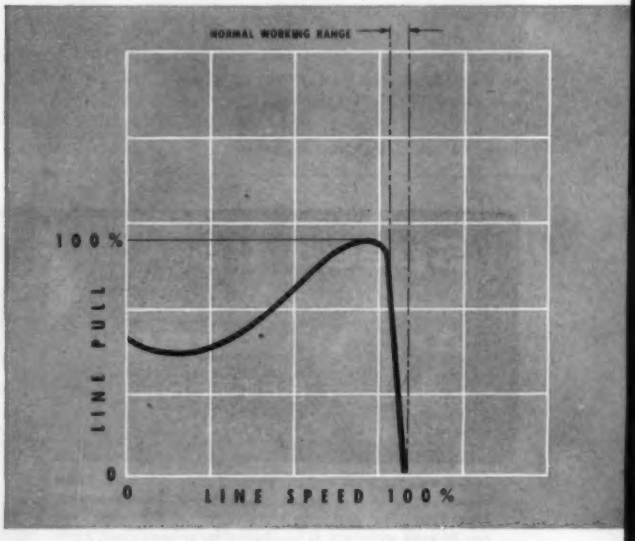


Power Performance of LIMA'S New Optional Unit:

A.C. Electric motor with torque converter drive [Diesel-torque converter curve (dotted line) shown for comparison]

With this drive, even under extreme loading, the motor will pull down in speed only a very small amount. It can never be stalled.

The line pull will constantly increase through a long pull down speed range, depending upon the load applied.



Power Performance: A.C. Electric motor with direct drive

The motor speed and torque varies as shown for line speed and pull.

With a pull down in speed of only 3% to 5%, torque rises too fast. The motor will stall quickly after peak torque is reached. Workable speed range is small, stalls are frequent.

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Innocent Persons

Very frequently two innocent and deserving purchasers become involved in litigation. The law is established that the one whose negligence resulted in the controversy must bear the ultimate loss. This is so although both sellers had good intentions throughout the deal.

For illustration, in *Mygirack v. Lepore,* 69 Atl. (2d) 772, it was shown that one Lepore purchased a motor vehicle, tires, etc. Under the designation for liens in the Bill of Sale, the word "None" appeared. Later Lepore sold the vehicle and accessories to one Mygirack. Without the knowledge of either Lepore or Mygirack there was a chattel mortgage covering the automobile and accessories.

Later the holder of the mortgage repossessed the automobile and accessories from Mygirack. Mygirack sued Lepore to recover the money he had paid to the latter for the vehicle.

Although both Lepore and Mygirack were innocent in the matter, the higher court held that Lepore must repay to Mygirack the amount paid because Lepore's negligence in not investigating and learning that the vehicle was mortgaged was the cause of the litigation.

Manufacturers' News

J. F. Catalane has been named general sales manager of the P&H Construction and Mining Division of the Harnischfeger Corp., Milwaukee, Wis.

With the assumption of his new duties, Mr. Catalane also becomes a member of the Harnischfeger Corp. executive committee. He also continues as sales manager of the Power Crane and Shovel Division.

Appointed assistant general sales manager of the Construction and Mining Division is Robert P. Jones, and Raymond A. Ehn has been named assistant sales manager, Power Crane and Shovel Division.

E. B. Hill has been appointed to the newly created position of assistant to president Julien R. Steelman by the Koehring Co., Milwaukee, Wis. He was vice-president and director of sales, advertising and export sales for Gar Wood Industries Inc., before joining the Koehring organization.

Election of E. P. Allis, president since 1945, to the post of chairman of the board and promotion of John W. Allis from vice-president to president has been announced by The Louis Allis Co., Milwaukee, Wis.

E. P. Allis joined the company as its secretary in 1915, and in 1922 was promoted to the position of vice-president. He served in that capacity for 23 years until he succeeded his father, Louis Allis, Sr., founder of the company, as president in 1945. At that time, Louis Allis, Sr., became chairman of the board, a position which he held until his death in 1950.

John W. Allis

E. P. Allis

John W. Allis started with the company in 1939 and has been vice-president of the company since 1945.

J. D. Raulerson, Jr., is now chief engineer of Lakeland Engineering Associates, Lakeland, Fla. He will be in direct charge of all engineering —structural, mechanical, electrical, chemical and sanitary. He is one of the founders of the company.

Paul Zia, who has done work with Lakeland in structural engineernig, is taking a leave of absence to study for his doctor's degree at the University of Florida.

John S. Newton has been appointed vice-president in charge of engineering by the Goodman Manufacturing Co., Chicago, Ill. He was formerly with the Baldwin-Lima-Hamilton Corp., Eddystone, Pa., as vice-president of the locomotive division, vice-president in charge of engineering and most recently as vice-president and manager of the testing equipment division.

Mr. Newton will be actively engaged in Goodman's mining machinery division but will be available to other divisions for consultation.

Speed Up
your work!
Arc Welding
does it BETTER
at LESS COST

Heavy Duty Gas Drive DC Arc Welder with many combinations of auxiliary power.

Speed up your work and cut welding costs with Hobart Gas Engine Drive Arc Welders. You'll avoid time-consuming breakdowns that delay the job and roll up the costs. They can be used anywhere to fabricate steel or repair and maintain equipment. No need for power—they provide their own. And there's a type and size for every construction job.

For extra heavy duty welding, contractors favor the Hobart DC Gas Drive Welders ranging up to 600-ampere capacity, with many combinations of auxiliary power.

Others like the combination AC Arc Welder and AC Stand-by Power Unit. Welds or powers lights, tools.

Many contractors are standardizing on the 250-amp "Contractor Special." A full capacity 250-ampere welder, compact and lightweight for easy moving from job to job.

Yes, Hobart has an arc welder for every application—check and return the coupon today for complete details!

AC Arc Welder-AC Stand-by Power Unit.

"Contractor Special" Arc Welder.

HOBART TROY OHIO **WELDERS**

Tear off and MAIL TODAY!

● HOBART BROTHERS CO., Box 9105 Troy, Ohio, U. S. A. Telephone 21223

Without obligation, please send information on items checked.

☐ DC Gas Drive Welders ☐ AC Arc Welder-AC Power Unit
☐ "Contractor Special" ☐ Electrode samples for_____

NAME_____ POSITION_____

FIRM_____

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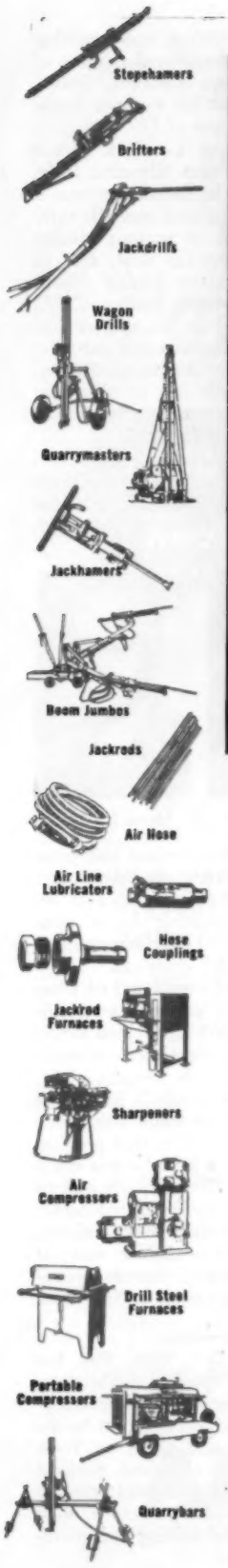


Everything for Drilling Rock

FROM THE CARSET JACKBIT BACK TO THE COMPRESSOR

TO make the best recommendation for rock drilling equipment you must imagine yourself in the bottom of the drill hole. That's where the real results show up. From there you see only the Carset Jackbit.

But behind this Carset Jackbit there's a completely coordinated line of Ingersoll-Rand rock drilling equipment. Current models of Drifters, Stopers, Jackhamers, Wagon Drills, Jackdrills and Quarrymasters were all designed to take full advantage of longer-lasting, faster-drilling Carset Jackbits. Add rod and bit shop equipment, mountings, accessories and air compressors, and you have a complete I-R line backed by 80 years of experience, unequalled rock drilling know-how and undivided responsibility.

The Carset Jackbit with correct I-R supporting equipment is cutting rock-drilling costs, cutting operator fatigue and increasing production the world over. Whatever your drilling problems, consult your local I-R representative. He can help you solve them.

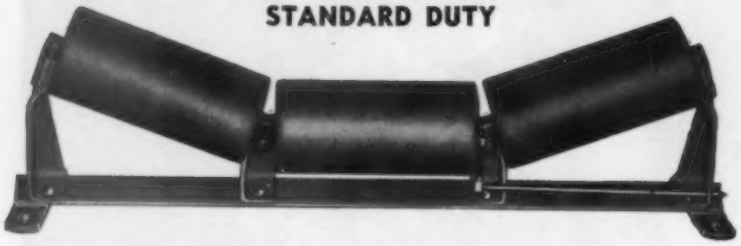
Ingersoll-Rand
11 Broadway, New York 4, N. Y.

837-5

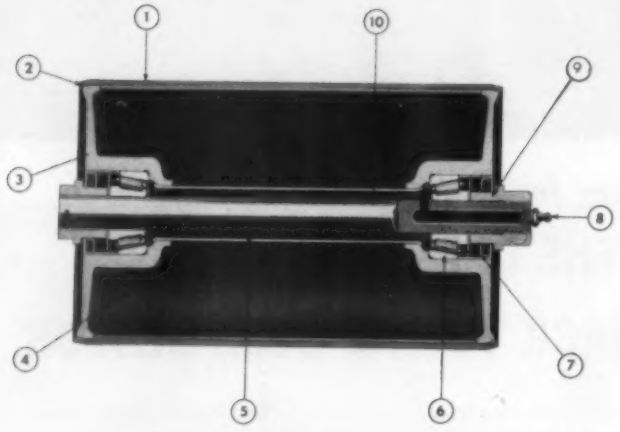
ROCK DRILLS • COMPRESSORS • AIR TOOLS • CENTRIFUGAL PUMPS • TURBO BLOWERS • CONDENSERS • DIESEL AND GAS ENGINES

WEBSTER TYPE 32
Roller Bearing Belt Conveyor Idlers

STANDARD DUTY



Webster Belt Conveyor Idlers are quality-designed to give you long service with the lowest possible power and maintenance requirements — perfect and permanent roll alignment — self-cleaning steel base — clamped-in rolls — easy removal of rolls as a unit — slotted holes in base to facilitate erection and permit alignment on conveyor frame.



CHECK THESE IMPORTANT FEATURES

(1) Balanced tubular steel roll, furnished in 6" or 5" diameter.

(2) Rounded edges provide positive lock for malleable ends and protect the belt.

(3) Malleable iron ends keep bearings in perfect alignment and readily deflect dust and dirt from the bearings.

(4) Strong steel tube adds strength.

(5) Inner grease reservoir is provided by the steel tube.

(6) Timken tapered roller bearings with hardened inner and outer races. Life-Seal bearings can be furnished.

(7) Labyrinth metal and felt grease seal. When handling fine, abrasive materials, all-metal seal is furnished.

(8) One side hydraulic lubrication.

(9) Malleable iron closure assures proper bearing clearances by means of adjusting nut.

(10) Accurately machined roll shaft is of ample size.

WEBSTER MFG., INC.
TIFFIN, OHIO
Offices in Principal Cities

Edwin Letts Oliver, noted mining engineer and founder-chairman of Dorr-Oliver Inc., Stanford, Conn., died suddenly at his summer home recently, at the age of 77.

Best known for his work in the field of continuous filtration, Mr. Oliver's career in metallurgy was a long and distinguished one. His early work took him to various mining properties in the far west, and in 1904, shortly after joining North Star Mines in Grass Valley, Calif., he was assigned to the task of improving gold recoveries and reducing tailings losses in the mills. His investigations there led to the subsequent development of the Oliver Continuous Filter in 1907.

Anthony Anable has recently resigned his position with Dorr-Oliver to become director of public relations for the United Fund of Stamford, Inc., Stamford, Conn.

Edwin L. Oliver

Henry H. Allen

Henry H. Allen, retired vice-president and director of Bemis Bro. Bag Co., St., Louis, Mo., died recently at his summer home near Huntington, N. Y., after an extended illness. He was 82 years old.

Mr. Allen had completed 64 years of Bemis service at the time of his retirement in 1953. He joined Bemis in 1889, and two years later was made superintendent of the Omaha plant. When a factory was built in Kansas City in 1903, Mr. Allen was made manager and stayed in that position until 1911. A year later he was elected secretary of the company and to membership on the board of directors. He was made a vice-president in 1921 and some years later was put in charge of Bemis' eastern operations with headquarters in New York City.

Alloy Rods Co., York, Pa., has announced the opening of the company's new research and development center, located adjacent to the general offices and plant at York. Facilities include chemical, physical testing and welding laboratories, as well as a complete machine shop and experimental mixing and extrusion department.

MORE TONNAGE

...at less cost!

Low Voltage Resistance Heating Prevents Moist Materials From Adhering to Screen Cloth

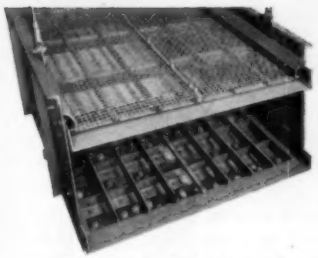
By keeping screen cloth clear, the *Thermo-Deck* heating unit increases capacity in two ways . . .

1. Screening efficiency is improved on a clean deck.
2. Converts downtime into production time by eliminating the need for manual cleaning of cloth.

Increases Cloth Life, Too— With a *Thermo-Deck* unit on the job, screen cloths last as much as three times longer than unheated screens. Because blinding is eliminated, the necessity for destructive pounding, brushing and flame heating is also eliminated.

Thermo-Deck units may be used on all vibrating screens handling fine moist material. Installations can be made on single-deck screens or on any deck of a multiple-deck unit.

A-4651



For Intermittent Feed, use *Sta-Kleen* Deck with Heating Unit

The use of a *Sta-Kleen* deck prevents fine materials from baking on screen during interruptions in feed. Rubber balls bouncing between the screen cloth and a retaining deck impart a dislodging vibration.

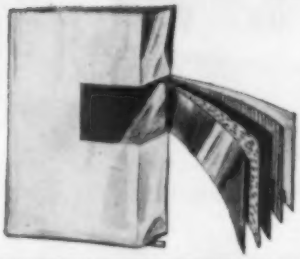
For complete information on the THERMO-DECK *heating unit, see your A-C representative or write Allis-Chalmers, Milwaukee 1, Wisconsin, for Bulletin 07B7812A.*

Thermo-Deck and Sta-Kleen are Allis-Chalmers trademarks.

ALLIS-CHALMERS

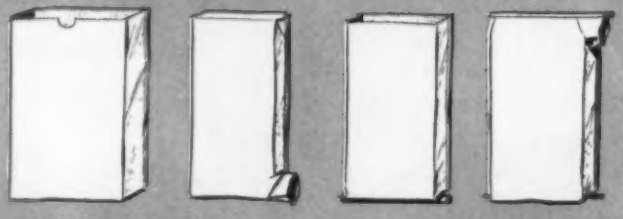
Here's Multiwall Shipping Sack Selection

One to five walls . . any type material



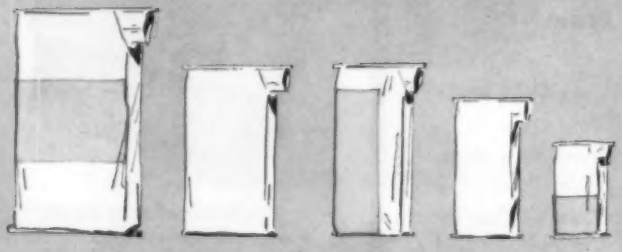
Whatever your needs — one to five walls of whatever type paper required — asphalt, double strength kraft, blue liner, polyethylene, in any combination — readily available.

. . . of every popular type



Open mouth or valve, in sewn or pasted styles, to exactly suit your filling requirements.

. . . in any size . . mixed carloads



From two to 100 pound capacities — and shipped in mixed car lots where desirable.

Bag redesign? Special product? Write for your free booklet that tells the complete T-P story.

Thomas Phillips
MULTIWALLS
AKRON 8, OHIO

For 83 Years a Leading Supplier of Shipping Bags for Agriculture and Industry

Donald S. Walker, vice-president and director of sales of Combustion Engineering, Inc., New York, N. Y., has announced the following promotions:

Carmine J. Grossi from assistant general sales manager to manager of the export division.

Frank J. Bader formerly district manager at San Francisco to assistant general sales manager in New York.

Herman C. Reichard from the Kansas City sales office to district manager in San Francisco.

Through an exchange of stock, the Lamson & Sessions Co., of Cleveland, Ohio, recently acquired The Kent Machine Co., of Cuyahoga Falls, Ohio. The newly acquired company will operate as The Kent Machine Division of the parent company.

Activities at The Kent Machine Co. will continue under the direction of H. T. Young, general manager; T. S. Daugherty, assistant secretary; Dan Urban, sales manager, concrete machinery; Robert Robinson, sales manager, special machinery; A. G. Walker, chief engineer; Robert Marietta, assistant chief engineer and Lee Pettit, purchasing agent.

Jerome M. Kostus, has joined the sales staff of Lippmann Engineering Works, Milwaukee, Wis., and will represent them in New Jersey, the eastern third of Pennsylvania, and southeastern New York including New York City. He will locate his residence and headquarters in New Jersey and will operate factory direct and through the present Lippmann dealers in these regions, namely, the Highway Equipment & Supply Co., Harrisburg, Pa., and Walton Equipment Co., New York City.

Howard J. Peppercorn has been promoted to works manager of The General Tire & Rubber Co.'s Marion, Ind., plant, and Lester A. Kaye has been named works manager of the company's Logansport plant in Indiana.

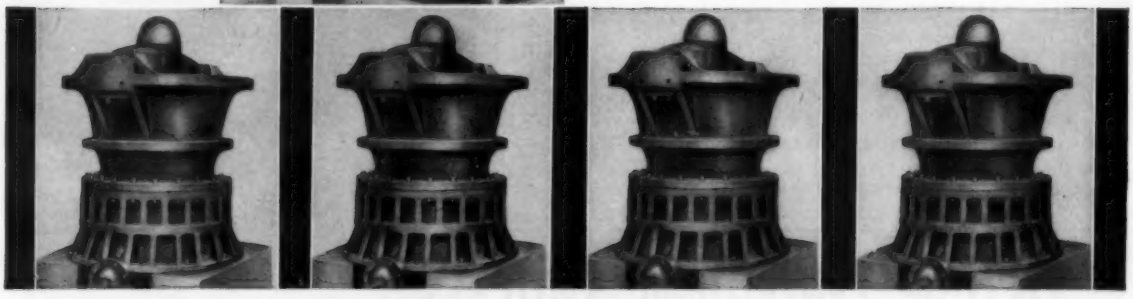
Mr. Peppercorn, formerly Logansport works manager, began at General's Akron headquarters in 1950 as new products sales engineer. He was named to the Logansport post in 1952.

Mr. Kaye started with General last May as technical superintendent of the Logansport operation. He has thorough formal training in engineering and years of practical technical experience with other industrial firms behind him.

Erie Mining uses Traylor's Experience to get Economical Production of Taconite Ore

Traylor Now Building Giant Primary Crusher

WITH 60" RECEIVING OPENING AND 120" DIAMETER CRUSHING HEAD



. . . plus four 36" Gyratories for Erie Mining Company's Aurora Project

Profitable production of iron ore from low-grade Taconite calls for the most modern, efficient methods and equipment. That's why Erie selected Traylor Gyratories for both primary and secondary reduction of the extremely hard Taconite-bearing rock.

Traylor is now building for Erie a huge 60" Gyratory Primary Crusher which is higher than a three-story house and weighs more than a million and a quarter pounds . . . this giant TC Gyratory is the seventh of its kind to be built by Traylor. Chunks of ore the size of a flat-top desk dumped into this crusher at the rate of 4,400 long tons per hour will be reduced to 12". In a 15 hour day, this TC will crush 66,000 long tons of rock. Four 36" Traylor Gyratories will take the 12" ore from the crusher and reduce it to minus 5" in the secondary reduction operation.

For the past 50 years, leaders in the mining industry throughout the world have turned to Traylor for the most efficient equipment to help them keep pace with advanced mining methods.

* * *

For complete specifications and description of the outstanding features of Traylor TC Gyratory Crushers, send for your copy of Traylor Bulletin No. 126.

TRAYLOR ENGINEERING & MFG. CO.
1726 MILL ST., ALLENTOWN, PA.
SALES OFFICES: New York • Chicago • San Francisco
Canadian Mfrs: Canadian Vickers, Ltd., Montreal, P.Q.

A Traylor leads to greater profits

Primary Gyratory Crushers

Rotary Kilns

Secondary Gyratory Crushers

Ball Mills

Jaw Crushers

Apron Feeders

A. M. Kohler, vice-president of The Babcock & Wilcox Co., New York, N. Y., and head of its refractories division, has retired from the company. Active charge of the division has become the responsibility of J. E. Brinckerhoff as manager

A. M. Kohler

J. E. Brinckerhoff

Mr. Kohler joined the B&W Co. in 1913 at its former Bayonne, N. J., plant, and was appointed general manager of the company's refractories division in 1930. He was elected a vice-president in 1947.

Mr. Brinckerhoff joined B&W in 1919. He was appointed manager of the refractories division in 1953.

Two of the sales companies handling the sales of Syntron equipment, plus other industrial equipment have announced the following appointments within their sales organizations.

Syntron Reading Sales Co., has named William R. Robinson to their sales staff as district salesman. He will sell in northeastern Pennsylvania.

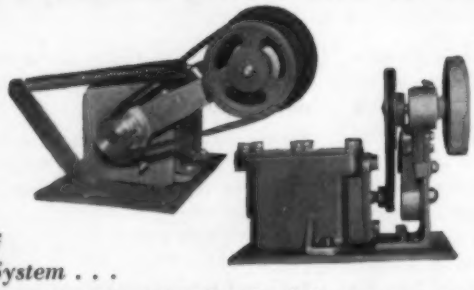
E. W. Rasmussen has recently been employed by Syntron San Francico Sales Co. as a district salesman in the San Francisco Bay area.

Now serving the entire southern half of Minnesota with the complete line of P&H Power Cranes and Shovels is the H. C. Ormes Construction & Equipment Co., 5600 Wayzata Blvl., Minneapolis, Minn.

Ormes is working closely with the factory in setting up a complete inventory of genuine P&H repair parts. Also, facilities are being expanded to provide fast shop maintenance help or rush, on-the-spot field service.

Ingersoll-Rand, New York, N. Y., announces the availability of a new 16mm sound color film entitled "The Long Street" which deals with modern super highway construction. The film may be obtained from Ingersoll-Rand Co. (Film Service Dept.) Phillipsburg, N. J., for showings. There is no charge except for return postage.

ENSIGN CENTRIFUGAL SWITCHES



The Watchdog of Your Conveyor System . . .

Ensign Centrifugal Switches for belt conveyors provide belt protection and sequence operation of multiple conveyors including shaker or chain conveyors feeding onto belt conveyors. Bulletin 1100 Centrifugal Switch, left above, has dust-tight enclosure. Bulletin 1101, right above, has explosion-tested enclosure.

Request Ensign Bulletin 1100 (dust-tight) or 1101 (explosion-tested)

ENSIGN

ELECTRIC AND MANUFACTURING CO.

914 Adams Avenue — Huntington 4, W. Va.

Authority Bldg., 111 Eighth Ave., at 15th St. Charles T. Spalding is manager of the offices and C. W. Dietrich, Jr., is district engineer in charge of bearing sales.

M. B. Garber and E. C. Brekelbaum have been elected vice-presidents of The Thew Shovel Co., Lorain, Ohio. C. B. Smythe was elected treasurer of the company to replace the late H. L. Reynolds, and will carry the title of president-treasurer.

Mr. Garber has been with Thew for 28 years, most recently as director of sales. He has been active in many of the construction industry associations as chairman of the Mfgrs. Division of the Crushed Stone Assn.,

M. B. Garber

E. C. Brekelbaum

chairman of the Mfgrs. Division of the Sand & Gravel Assn., and others.

Mr. Brekelbaum came to Thew in 1952 as director of methods after 17 years of association with the Harnischfeger Corp. of Milwaukee, where his last post was as vice-president and executive chief engineer. In 1954, he was appointed assistant to the general manager of Thew with responsibility for Methods, Engineering and Quality Control.

C. B. McCord has been named plant manager of International Paper Co.'s three multiwall bag plants. He will replace S. D. Andrew who retired after 26 years of service. Mr. Andrew had been manager of all the Bagpak Division's plants since 1929.

Mr. McCord joined the company in 1934 as a pressman at the company's Philadelphia plant. In 1936, he was named printing foreman at the Camden plant and later research and development foreman. In 1946 he became superintendent of the Bastrop plant and six years later was appointed superintendent at Camden. In 1953 he was named assistant plant manager for all the Bagpak Division plants, a position he held until his present appointment.

Dependable way to keep crusher full

HOW ONE QUARRY OPERATOR DOES IT

"I can always keep the crusher going and the hopper full with that baby!"

This remark was made by Clair Hearn, job superintendent and shovel operator for the Greene Limestone Co., Greene, Iowa. "That baby" is a ¾-yd. Bucyrus-Erie 22-B shovel. Hearn knew what he was talking about because he had seen this 22-B load 1500 tons of stone per 10-hr. day into a portable crushing plant to keep a fleet of 6- to 8-yd. haul units on the move.

Bucyrus-Erie performance builds that kind of confidence. It begins with sound design that matches every machine component to the rated load. This means not only sustained high output, but much less time out for maintenance, and many years of added working life. Your operator works better, too, does more because controls are conveniently grouped, easy to operate.

See your Bucyrus-Erie distributor soon for excavators from ⅜- to 4-cu. yd.—and be sure of getting the most output for the lowest cost.

123E55

BUCYRUS ERIE
South Milwaukee Wisconsin

1880 75 1955
YEARS OF SERVICE to Men Who Shape the Earth

How to get more work out of your wire rope

Get *higher-than-rated quality.*
Get *longer-than-expected service.*
Use Hercules Red-Strand.
It costs no more.

LESCHEN
HKP
HERCULES *Red-Strand*®
WIRE ROPE

from leading distributors

LESCHEN
WIRE ROPE DIVISION
H. K. PORTER COMPANY, INC.
St. Louis 12, Missouri

Ed Burgers, Jr., sales representative in the St. Louis area for Kraft Bag Corp., multiwall bag manufacturing subsidiary of Gilman Paper Co. with plants at St. Marys, Ga., and Gilman, Vt., has been assigned to the New York office to concentrate on new business development in Metropolitan New York and New York State. His replacement in St. Louis is Frank C. Joos, Jr., for almost 10 years with Bemis Bros. at Peoria, Ill. Mr. Joos will cover the states of Missouri, Southern Illinois, Eastern Oklahoma, and Arkansas, reporting to Dean Wellington, western sales manager in the company's Chicago office.

Other appointments and announcements by Kraft Bag Corp. include:

R. F. Floyd, formerly with Union Bag, covers New England and Metropolitan New York, working out of the New York office.

R. E. Kunze, formerly with Fulton Bag, represents Kraft Bag Corp. in Kansas, part of Iowa, Northwest Missouri, Central and Western Oklahoma. His headquarters are in Kansas City, reporting to Dean Wellington.

J. R. Charlton, formerly with International Milling, who has been with Kraft Bag Corp. for over a year, working out of Minneapolis, has been assigned to call on the jobber trade for the Gummed Tape Division of Gilman Paper Co. He also reports to the Chicago office.

R. A. Kurlander, formerly with Westinghouse Mfg. Co., has joined the company's Kraftpacker Sales Division as field engineer on packaging machinery, operating out of Montgomery, Ala.

M. T. Sprague has been named Oakland, Calif., district manager by the motor truck division of International Harvester Co., Chicago, Ill., to succeed Roy A. Legge, retired.

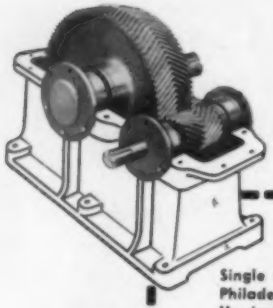
Mr. Sprague, a veteran of 18 years service with IH was formerly Portland, Ore., International truck district manager, and also served in various sales capacities previously at Denver and Los Angeles.

Mr. Legge retired after 37 years with the company, the last 27 of which were spent as manager of the Oakland truck district.

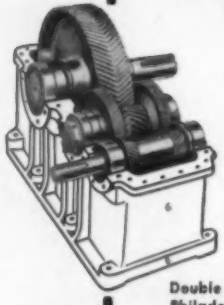
G. S. Stewart, formerly assistant to Sprague at Portland, has been named district manager there. Promoted to Portland assistant district manager is R. M. Beauchamp, who managed the International branch operation at Seattle, Wash.

Teeth that really dig
ROLLED
ALLOY STEEL
HAMMER FORGED
Pat. No. 2,568,075
H & L
TOOTH CO.
1540 SOUTH GREENWOOD AVE.
MONTEBELLO, CALIFORNIA

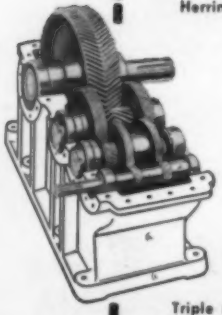
REDUCER PROBLEM?...consult



Single reduction
Philadelphia
Herringbone Reducer



Double reduction
Philadelphia
Herringbone Reducer



Triple reduction
Philadelphia
Herringbone Reducer

If you have a problem involving high horsepower speed reduction with heavy shock loads, Philadelphia Herringbone Reducers are the answer. These quality-built units are available in Single, Double and Triple Reduction types, offering a wide selection of capacities and reduction ratios. The continuous tooth type herringbone gears assure evenly distributed pressure over each tooth from the top to the working depth line, — which means exceptionally long life, minimum vibration, quiet operation and maximum transmission of power . . . Thousands of Philadelphia Herringbone Reducers are in daily use, in most every line of industry. Be convinced, send for Catalog H-49.

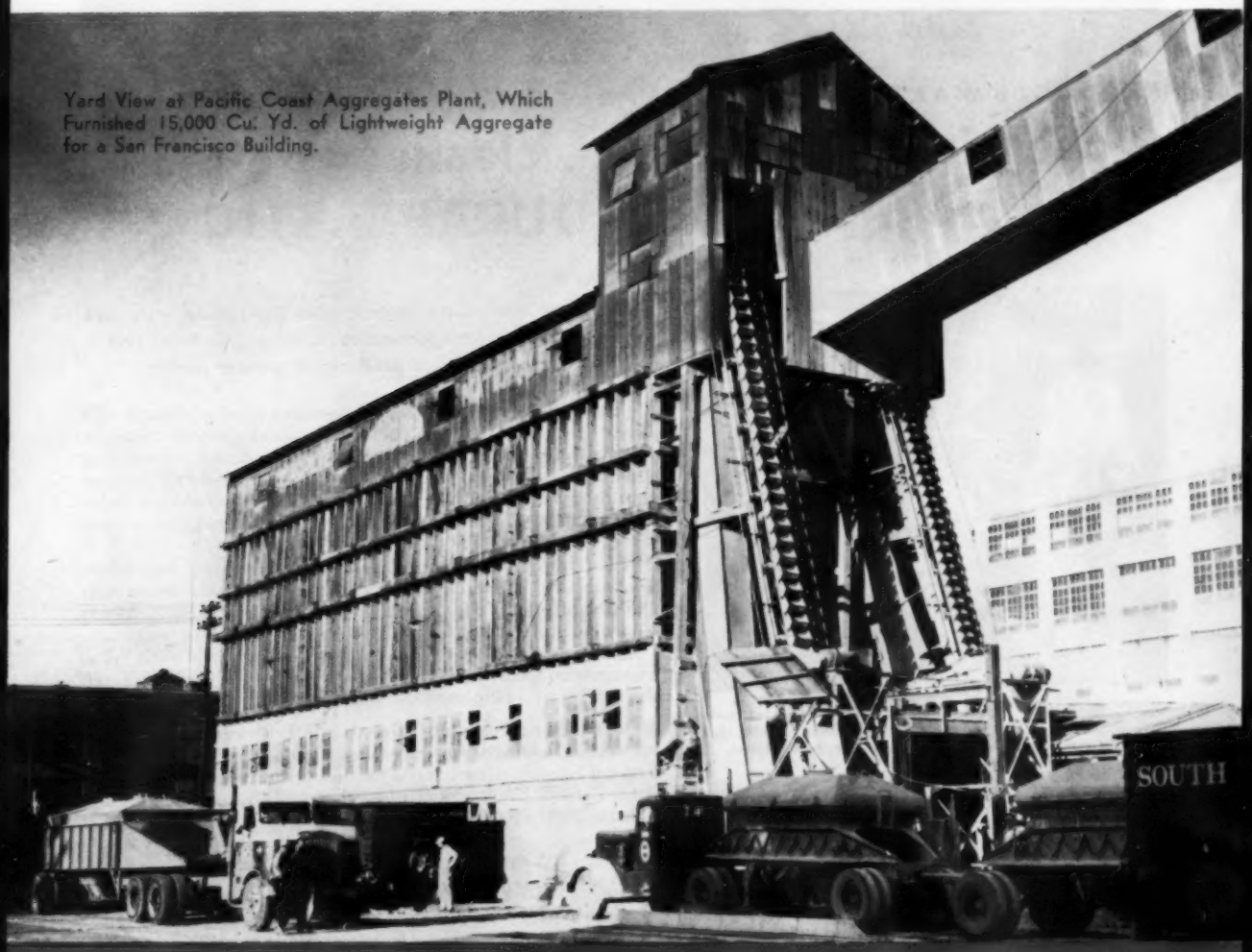
PHILADELPHIA GEAR WORKS
INCORPORATED
ERIE AVE. AND G ST., PHILADELPHIA 34, PA.
NEW YORK • PITTSBURGH • CHICAGO • HOUSTON • LYNCHBURG, VA.
BALTIMORE • CLEVELAND
Virginia Gear & Machine Corp., Lynchburg, Va.
Industrial Gears & Speed Reducers • LimiTorque Valve Controls
Established 1892

For producers of Concrete Building Units, Pipe and Ready-Mixed Concrete.

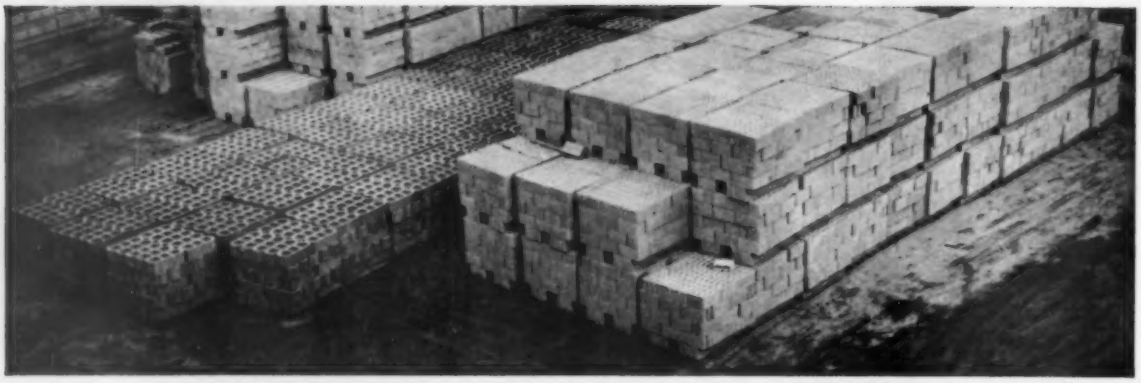
OCTOBER 1955

THE CONCRETE MANUFACTURER

A SPECIAL SECTION OF PIT AND QUARRY



Yard View at Pacific Coast Aggregates Plant, Which Furnished 15,000 Cu. Yd. of Lightweight Aggregate for a San Francisco Building.



GOOD APPEARANCE BUILDS SALES and Duraplastic-made products like these at Pre-Cast Concrete Products, Inc., Chicago Heights, Ill., feature rich texture and clean, true edges for customer appeal.

PRODUCTS MANUFACTURERS REPORT:

Richer face texture . . . cleaner edges . . . fewer rejects with DURAPLASTIC*

MIXES MADE WITH ATLAS DURAPLASTIC CEMENT feed easily through this block machine at Pre-Cast Concrete Products, Inc. Less breakage and fewer culls mean lower production costs . . . higher profits for manufacturers.

OFFICES: Albany • Birmingham • Boston • Chicago • Dayton • Kansas City Minneapolis • New York • Philadelphia • Pittsburgh • St. Louis • Waco

Here's how Duraplastic cement trims production costs and improves product appearance . . . helps you make and sell more concrete products at greater profits

It's *easier* to sell cleanly formed concrete products made with Atlas Duraplastic Air-Entraining Portland Cement. Smooth, cohesive Duraplastic-made mixes give products sales-promoting good appearance – clean, true edges, plus richer face texture. And products made with Duraplastic Cement offer high resistance to passage of water, another important sales point in your favor.

Atlas Duraplastic Cement means greater economy, too. Mixes are "rubbery" and hold together better. This means fewer culls and throwbacks . . . less breakage in handling of green products . . . reduced production costs and greater profits for you.

You'll produce better block and other products with Atlas Duraplastic Cement. Mixes made with it feed easily through the machine . . . help increase production.

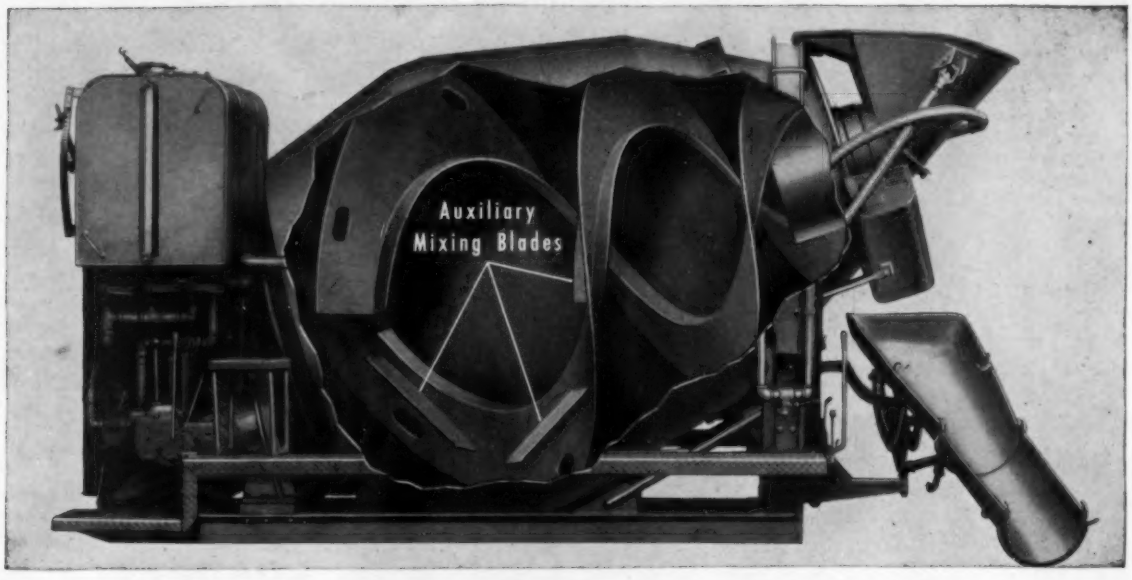
YET DURAPLASTIC COSTS NO MORE than regular cement! Requires no unusual changes in procedure. Complies with ASTM and Federal Specifications. Write for descriptive booklet. Universal Atlas Cement Company (United States Steel Corporation Subsidiary), 100 Park Avenue, New York 17, N. Y.

"Thrifty" says: Atlas Duraplastic Cement cuts costs and boosts profits by decreasing breakage and reducing the number of costly culls and throwbacks.
"Nifty" says: Sales and good appearance go hand in hand. Customers go for the clean, true edges and richer texture of Duraplastic-made products.
*"Duraplastic" is the registered trade-mark of the air-entraining portland cement manufactured by Universal Atlas Cement Company.
ATLAS®
DURAPLASTIC
AIR-ENTRAINING PORTLAND CEMENT
CM-D-170
A UNIVERSAL ATLAS PRODUCT

Makes Superior Concrete Products at No Extra Cost

UNITED STATES STEEL HOUR—Televised alternate weeks—See your newspaper for time and station

WESTINGHOUSE Transit Mixers



The mixers with "double-action" mixing drums for faster and more uniform mix...

• Westinghouse mixing drums are designed for one-direction, open-hopper mixing. Spiral mixing blades are deeper than those of most mixers —and—each spiral is equipped with three auxiliary mixing blades welded to the spirals. These six auxiliary blades (each 36 in. x 7 in.) produce a criss-cross mixing action which prevents segregation and produces the most thorough and uniform mix you ever saw. Furthermore, a Westinghouse is ready to discharge concrete immediately on short hauls where other mixers have to stand by for additional mixing before discharge.

2-Speed Transmission is standard on all models. Provides wide range of drum rotating speeds for mixing or agitating.

. . .

Westinghouse Transit Mixers are available in 5 sizes — 4½ to 6½ yd. Before buying another mixer mail coupon below (attached to your letterhead) for descriptive folder.

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LeTourneau-Westinghouse Co., Indianapolis, Indiana
Member of NRMCA

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Company.....

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CM

LOAD with the Model 543. Travels from job to job at 15 m.p.h. Trims highest, longest trucks or trailers. Trims to load to full capacity every time. Capacity: to 3 cu. yd. per min.

LOAD

LOAD at lowest cost.

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LOAD, screen or strip topsoil at top efficiency.

LOAD easily—simple operation allows driver to load his own truck.

LOAD sand, gravel, coal or snow.

LOAD from windrow at 4 cu. yd. per min. with the Model 550 Windrow Loader. Handles snow at 7 cu. yd. per min. Keeps ahead of trucks normally available. Turning radius: only 8′, 6″.

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The CONCRETE MANUFACTURER

October 1955

Safety Needs You

SUCCESS in safety, as in almost every other worthwhile field of endeavor, is attained only through unremitting effort the year around; a good safety record in an industry also requires the wholehearted participation of every company in the industry. Could such universal participation be achieved, the safety records resulting would be phenomenal, judged by present standards. Such ideal conditions, however, will probably always elude industry as long as safety efforts are optional with every individual employer. It is becoming increasingly evident that safety efforts may soon be required of employers under threat of penalties.

Government or union-controlled enforcement of safety, with its many unpleasant implications, is something to be avoided if it is humanly possible to do so. The only way it can be avoided, obviously, is for producers, individually or through their associations, to start immediately in promoting safety in their own organizations. Ready-mixed concrete producers who are members of the National Ready Mixed Concrete Association should all participate in that organization's excellent safety program by entering its annual safety contest, which was initiated in 1946. Manufacturers of concrete block who are members of the National Concrete Masonry Association should all participate in its safety program and the contest which is now entering its third year.

Those in these industries who are not members of these associations would find that the safety benefits alone are worth the cost of membership. Or they could become members of the National Safety Council, and would find this to be one of the best buys they ever made. It is, of course, not necessary to join anything in order to attain safety in the operation of a business. The chief requirement is that management be interested enough in the welfare of the employees to take every possible safety measure. Efforts of this type must begin at the top if they are to be successful.

Although the period for the N.C.M.A.'s second annual safety contest (1954-5) ended July 31, 1955, members can still send in their entries and safety records until November 30. Awards will be presented to the winners at the annual convention in New Orleans (January 23 to 25, 1956). The N.R.M.C.A. annual contest for members also ended at midyear, but this is closed to further entries; in fact, the winners will soon be announced. Awards will be presented at the annual convention in Chicago (February 13 to 16, 1956). Entries are being accepted, however, for the 1955-6 contest, which is now under way.

Whether or not he is a member of any association or other group promoting safety, every producer of ready-mixed concrete, concrete block, concrete pipe, etc., should immediately start a safety program of his own. The human benefits to be obtained are tremendous, and the financial benefits can also be substantial.

Walter E. Trauffer

BESSER VIBRAPAC

Gives You MORE!

The growth of the concrete block industry coincides with the growth of the Besser Manufacturing Company. 50 years ago, Besser made the first concrete block machine. Since then, the company has devoted its constant and untiring efforts to producing better block machines, pioneering new types and improving production methods. Today — the Automatic Vibrapac is the result of that half-century of pioneering and developing. The machine gives you MORE . . . more power, more smoothness, more ruggedness, and, what every block plant operator is primarily interested in, more block production. No doubt about it — the Automatic Vibrapac is the world's leading concrete block machine — a PROFIT MAKER for block plants everywhere.

MORE power

The Automatic Vibrapac provides unidirectional vibration from two 10 horsepower, high starting torque vibrating motors — DOUBLE the horsepower of any other block machine.

MORE production

The famous Besser cam and roller principle assures maximum block production. The slow revolving cam, with a roller riding on its surface, delivers power with pin point precision and with steady, uninterrupted regularity.

MORE smoothness

The Vibrapac is equipped with gravity actuated block moving weights which assure much smoother delivery of the finished block at high speeds.

MORE ruggedness

The machine frame of the all-steel electrically welded Vibrapac is made of 1½" thick steel—almost unbelievable, but it's a fact. That's why the Vibrapac is able to produce block, day-in and day-out, without interruption — for YEARS.

Watch VIBRAPACS Work

Step into any Vibrapac block plant and see high quality block made, *automatically*. Notice there are no lost motions and no time is wasted. Pallets and mixed materials are fed automatically. As block are completed, they are quickly transferred to the racks. No manual lifting. Off-bearer merely guides the power hoist.

●

Vibrapacs are versatile. They make ALL types and sizes of high-quality masonry units on ONE set of Plain Pallets. Vibrapac Block are specified by progressive architects — used by leading contractors—produced and sold by leading concrete products plants.

Originated by BESSER

See the BESSER Exhibit at the NATIONAL HOUSING CENTER Washington, D. C.

Your profits depend largely on the uninterrupted production of high quality masonry units. The Automatic Vibrapac enables you to reach this goal. It produces block of exact height and uniform density on a continuous production line. Three 8"x8"x16" modular units (or equivalent in other sizes) are made at a time on one Plain Pallet. No machine operator is required.

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News of the Concrete Industries

S.E. and Texas Block Groups Meet at Houston Nov. 20-23 To Study Industry Problems

The Southeastern regional meeting of the National Concrete Masonry Association will be held in conjunction with the Texas Concrete Masonry Association at the Shamrock Hotel, Houston, Tex., November 20 to 23, 1955.

Plans call for the meetings to be addressed by national business and political figures. E. C. Burris, executive vice-president, Texas Manufacturers Association, will discuss economic trends in the south. Gov. Allan Shivers of Texas is scheduled to address the meeting.

Industry talks will include an address by Cedric Willson, Texas Industries, Inc., Dallas, Tex., who will speak on the participation of the concrete masonry industry in Operation Cue, the recently concluded A-bomb tests at Yucca Flats, Nev. Technical discussions will include a talk by Wolf G. Bauer, Atlas Building Products Company, El Paso, Tex., who will discuss the effect of pozzolonic materials in concrete masonry. Panel discussions on single- and double-phase high-pressure-steam curing, carbonization curing, and other new techniques for curing concrete masonry products are also on the agenda.

W. C. Schmidt, E. A. Krehbiel Join N. Y. Ready-Mix Firm

William C. Schmidt and Eric A. Krehbiel of Kendall Roadways Inc., and the Clarence Sand & Gravel Co., Clarence, N. R., have purchased the 50 percent interest in the Amherst Ready Mixed Concrete Corporation, Buffalo, N. Y., formerly held by Fred Seitz, president of Fred Seitz, Inc., a plastering and lathing firm in Cheektowaga, N. Y.

The new management of Amherst has named Franklin P. Taylor general manager. He has been assistant to the president of the J. M. Cranz Co., Inc., and in earlier years served as sales manager of the Stone-Mix Concrete Corporation.

Mr. Schmidt is the new president of the company, a position formerly held by Mr. Seitz. He is treasurer of Kendall Roadways and Clarence Sand and Gravel. Mr. Krehbiel is treasurer. He is president of Clarence Sand and Gravel and vice-president of Kendall Roadways.

Harvey H. Pfennig, who retains his large holdings in the company, continues as vice-president, and George F. Schneider has been named sales manager.

Allied Chemical & Dye Division Buys Concrete Mixing Plant

The Barrett Division, Allied Chemical & Dye Corporation, recently announced that it has purchased a portable bituminous concrete mixing plant from New York Materials, Inc., of Fort Edward, N. C.

The plant will be moved to the site of the Barrett bituminous concrete and stone crushing operation near Norwood, N. C., and will be used to supply bituminous concrete for highway projects in the area.

Choctaw, Inc., Memphis, Tenn., concrete products firm, has under construction a new $500,000 plant for the manufacture of concrete sewer and culvert pipe, and concrete bridge slabs. The new facility will be located in West Memphis, Ark., on a 15-acre site served by a new siding from the Frisco Railroad.

Larry M. Condrey Named To Engineering-Sales Post By Cedar Rapids Block Co.

L. M. Condrey

Larry M. Condrey, professional engineer, has joined the sales and engineering staff of the Cedar Rapids Block Company, Cedar Rapids, Iowa.

Before joining Cedar Rapids Block Company, Mr. Condrey was design and production engineer for the Blocked-Iron Corporation, Albany, N. Y. Previous to this time he served as structural engineer for Precast Concrete Products, Chicago, Ill., and the Portland Cement Association, Indianapolis, Ind., and was an associate engineer in the firm of Lewis S. Finch, Consulting Engineers, Indianapolis.

He is a member of the American Concrete Institute, the National Concrete Masonry Association, and National Society of Professional Engineers. He served on the Technical Problems Committee of N.C.M.A. from 1949 through 1952.

Coming Events

October 10-12, 1955—St. Petersburg. First National Prestressed Concrete Short Course. Maritime Base.

October 17-21, 1955—Chicago. 43rd National Safety Congress and exposition. Conrad Hilton, Congress, Morrison, and La Salle Hotels.

October 19-24, 1955—Rancho Santa Fe, Calif. Seventh annual convention, American Concrete Pressure Pipe Association. The Inn.

October 20-21, 1955 — West Point, N. Y. Fall meeting, Empire State Sand and Gravel and Ready Mix Association. Hotel U.S. Thayer.

October 31-November 1, 1955—Atlanta. Regional meeting, American Concrete Institute. Atlanta Biltmore Hotel.

November 1-3, 1955—Miami Beach. Eighth annual convention, Southeastern Concrete Pipe Association. Key Biscayne Hotel.

November 14-16, 1955—St. Louis. Fifth Annual Short Course School of Instruction, American Concrete Pipe Association. Chase Hotel.

November 21-23, 1955 — Houston. 12th annual meeting, Southeastern Concrete Masonry Association (in conjunction with Texas Concrete Masonry Assn.). Shamrock Hotel.

January 23-25, 1956—New Orleans. 36th annual convention, National Concrete Masonry Association. Roosevelt Hotel.

January 29-February 2, 1956—Chicago. 37th annual meeting, Associated Equipment Distributors. Conrad Hilton Hotel.

February 13-16, 1956 — Chicago. 26th annual convention and biennial exhibit, National Ready Mixed Concrete Association. Headquarters, Conrad Hilton Hotel; exhibit, Coliseum.

PRE-MIX OPERATORS

...now you can handle jobs

MANY MILES AWAY

DEMAND THE BADGE OF DEPENDABILITY

...with the new **super**

Hi-Lo CONCRETE TRANSPORT MIXER CO.

agitator

Made by the makers of the famous ROCKET Revolving Drum Truck Mixer

How many jobs have *you* missed—jobs just a little out of reach of your non-agitating equipment? Or how many times have you arrived on the job with a soupy, segregated mix? With the new, 6¼ cu. yd. *super Hi-Lo* agitator, you can make hauls that once were far out of range. Condition the mix as you go along—it's the same high quality when you pour as it is when it left your plant mixer.

Hi-Lo is probably the *least* expensive machine of its kind on the market. But more important, it is one of the least expensive machines to operate.

You see, the super Hi-Lo has a lot of sensible features that reduce maintenance, increase operating efficiency: Wide open top, replaceable liners of abrasion resisting steel, 180° swing chute with extension, sliding gate (no seal to replace), non-leaking, self-tightening packing glands, power takeoff, drive, replaceable blades and many others.

If you'll take a couple of minutes and send us the coupon, we'll show you how the new super Hi-Lo can be the key to higher profits for you!

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Gentlemen: Please rush full information, prices and terms on the following:

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Southern Pacific Milling Supplies U. S. Navy Project On San Nicholas Island

Southern Pacific Milling Company, operator of numerous aggregates, ready-mix, and asphaltic plants in central California coastal cities, is currently supplying approximately 4,000 tons of bituminized aggregates to the Cox Construction Company for use on a huge U. S. Navy secret construction project on San Nicholas Island.

The asphaltic material is mixed in a Madsen 4,000-b. bituminizing plant adjoining S.P.M.'s aggregates plant at El Rio, Calif., then trucked to dockside at Port Hueneme, where it is loaded onto barges, each carrying 110 tons of the prepared paving mixture. The barges are towed out to sea to the island, located about 55 nautical miles southwest of the port.

Movement of the asphalt is expected to be completed in about 60 working days.

N. Y. Concrete Masonry Assn. Meets at Albany Oct. 14

The annual meeting of the New York State Concrete Masonry Association will be held at the Hotel Sheraton-Ten Eyck in Albany, N. Y., on October 14

Officers of the association include the following: John D. Daly, Auburn, president; Henry C. Quaritius Jr., Brooklyn, vice-president Lawrence Dagostino, Schenectady, treasurer; and Grant Reinhold, Buffalo, secretary. The officers and the following make up the board of directors: Harvey Black, Rochester; Garson Dinaburg, Binghamton; William C. Homer, Syracuse; Frederick W. Reinhold, Buffalo; and Lee Taylor, Watertown. Robert Abbey, Buffalo, is executive secretary.

According to an official release issued by the Associated Equipment Distributors, the national trade association of the construction equipment industry, the 37th annual meeting of the organization will be held the week of January 29 through February 2, 1956, at the Conrad Hilton Hotel in Chicago.

A new concrete pipe producing plant is under construction at Jasper, Mo. Costing $200,000 to build, the new plant will make concrete pipe in 6-in. to 72-in. diameters. The producing company will be known as the Brown Concrete Pipe Co., and will be owned by A. J. and C. B. Brown of Jasper.

N.C.M.A. Safety Contest Rules and Prizes Announced For 1954-55 Competition

The National Concrete Masonry Association has disclosed plans for its second annual plant safety contest, which is open to all N.C.M.A. members and covers the period from August 1, 1954, to July 31, 1955. All entries close on November 31, 1955.

According to Earl W. Peterson, chairman of the N. C. M. A. Accident Prevention Committee, which planned the contest, three factors will be considered in judging the safety records of competing firms—production volume, overall safety record, and total number of man-hours worked by employees in turning out concrete masonry products.

Consideration of these three factors is primarily designed to give all producers of concrete masonry units, large or small, an equal chance at the prizes Under the contest rules, firms are divided into three categories: (1) plants producing more than 5,000,000 8- by 16-in. equivalents; (2) plants producing 1,500,000 to 5,000,000 equivalents; and (3) plants producing less than 1,500,000 equivalents.

The safety chairman explained that for purposes of the contest the production of all units is converted to standard 8-in. block.

The contest will be judged by the N.C.M.A. engineering department, and winners will be announced prior to the annual convention in New Orleans, La., January 23 to 25, 1956. The contest awards will be presented at the convention. Prizes will be awarded in each category, and all firms without an accident will receive an award. Certificates or appropriate mementos will be awarded employees of the winning plants.

An important result of the contest will be a comprehensive post-contest report on the accident records of the plants entered in the contest. This report will include statistics on the number of man-hours required to produce 1,000 8- by 8- by 16-inch standard concrete masonry units.

In order to protect the competitive position of plants in the contest, the report will designate firms by a code number rather than by name.

The safety contest was inaugurated last year when it became apparent that the concrete masonry industry was lagging far behind other industries in reducing the frequency of accidents. Statistics gained as a result of the 1954 safety contest indicate that the accident frequency rate has been reduced for the concrete masonry industry as a whole.

Winners of the second annual N.C.M.A. plant safety contest will take home — wait! — this beautiful wall plaque to be awarded the three member plants which show the best safety records for the period August 1, 1954 to July 31, 1955. The pretty lass holding the prized award is Diane Daniggelis, who was named Miss Photoflash of 1955 by the Chicago Press Photographers Association.

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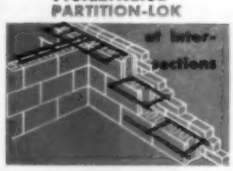
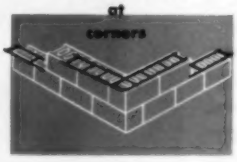
FLUSH-WELDED JOINTS—STRONGEST BY COMPARISON

Prefabricated PARTITION-LOK at intersections



Prefabricated CORNER-LOK at corners



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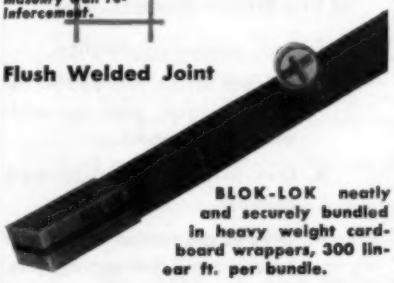

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BLOK-LOK Special Standard 8 ga. deformed side rods, 10 gauge galvanized cross rods, 16" centers

BLOK-LOK Heavy 3/16" rod with 9 ga. cross member

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ERIE STRAYER BATCH PLANT CUTS COSTS 20% FOR DIXIE CONCRETE PIPE COMPANY, NASHVILLE, TENN.

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"Also Gives Us a Better Product"

SAYS E. C. RODGERS, PLANT MANAGER

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Just one man mixes all the concrete needed to keep Dixie Concrete Pipe's equipment humming. An electrically-powered, mixed concrete hopper with remote control places mix in pipe machines. Plant will meet future needs of a pre-cast products casting yard also. Sold by Industrial Tractor and Equipment Company, Nashville.

DIXIE CONCRETE PIPE COMPANY, Nashville, supplies a large part of the concrete products for the busy Middle Tennessee area. This includes the pipe for Nashville's new sewage disposal system and T. V. A. Consequently, their pipe casting and block machines must keep up steady, swift production of quality products.

Until recently, Dixie Concrete bought their cement in bags. But last year, plant manager Rodgers, plant superintendent, W. J. Finney, and office manager, Wayne Harper decided they could effect a considerable savings by using bulk cement. Not only would they reduce the initial cement cost, but they would also save on freight, handling and materiels loss.

They looked over the plant suppliers—they bought an Erie Strayer Concrete Product Plant. Superior design, better engineering, and Erie Strayer's national reputation are the factors that sold them.

Whether you sell concrete or concrete products, before you buy, consider these proven advantages of Erie Strayer Plants:

1. Fast, economical erection.
2. Efficient design. Bins and batching equipment precision-engineered throughout.
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American Tractor Presents Transmission Innovations In Low-Priced Field

Two new developments in the low-priced crawler tractor field—a new all-hydraulic instant-shift transmission and a torque converter drive—are currently being introduced by the American Tractor Corporation, Churubusco (Ft. Wayne), Ind. Over 100 Tractorama demonstrations are planned to be held in key cities of the country by their dealers and distributors over the next six months. The entire line was pre-viewed by a group of trade publication editors at the factory on August 15.

While the advantages of torque converter drives have already been well established in larger crawler tractors, the TerraTrac is the first unit in the low-priced field to offer this advanced development as standard equipment.

Secret of the new Terramatic transmission is a unique constant-mesh gear train combined with hydraulically-operated clutches which provide automatic shifting in any speed and direction without loss of momentum. The new unit provides four speeds forward up to 5.62 m.p.h. and four speeds in reverse up to 6.2 m.p.h.

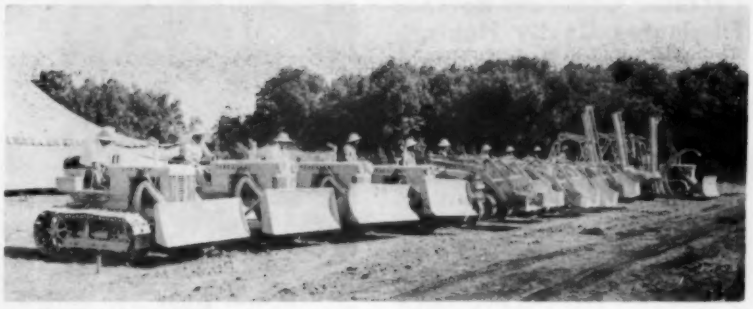
There is also an infinite number of "in-between" speeds with the torque converter, used on four new crawler models, and produced by the Long Manufacturing Division of Borg-Warner Corporation, Chicago, Ill. The converter, a two-stage hydro-kinetic type, is engineered for operation with Continental diesel and gasoline engines, which are used on the TerraTrac crawlers.

Low-cost transportation of crawler equipment is offered in a new 9-ton capacity tandem axle low-bed trailer, equipped with a solid tilting platform and electric brakes. It is available to new TerraTrac owners at about half the usual price for a trailer of this size.

Gifford-Hill-Western to Open Pipe Plant at Farwell, Tex.

Gifford-Hill-Western, Inc., will build a $75,000 concrete pipe manufacturing plant at Farwell, Tex., according to a recent announcement.

A. C. Clarke, manager of the new firm, said the field manager of the Farwell branch will be James Terrell. Construction on the 70- by 100-ft. building is expected to start shortly. Pipe in diameters of 12-, 14-, 16- and 18-in. will be produced at the rate of approximately 3,000 ft. per day.



American Tractor Corporation's new line of crawler models—'dozers, loaders, backhoes, fork lifts, and trailers.

Recent Ownership Changes Of Concrete Products Firms

Northern Concrete Products, Inc., near Petoskey, Mich., was recently purchased by the Alpena Cement Products Company, of Alpena, Mich. Alfred Sober of the latter city, will assume the position of manager of Northern in the near future.

Calvin Grosvenor, Bourbon, Ind., recently purchased and took possession of the Robert Burgner vault and cement works in Rochester, Ind.

The stock of the Goodloe & Cole Ready-Mix Concrete Company, Colorado Springs, Colo., was recently purchased by Al Goss of Boulder. He will operate the plant under the name of the G&C Ready-Mix Concrete Company.

William E. George and Eugene M. Nelson of Cottage Grove, Oreg., recently announced the purchase of the C. B. Ocumpaugh Concrete Products Company, a local plant. They will take over operation of the firm under the name of Nelson and George Concrete Products.

E. H. Siegling has been appointed manager of the Ford's Redi-Mix Concrete Company plant in Charleston, S. C., according to an announcement by J. D. Ford, president.

With a C & W Electronic Moisture Meter you may now measure the moisture content of your sand

INSTANTLY!

ACCURATELY!

ECONOMICALLY!

YES — Its Operation Is Instantaneous
Its Readings Are Extremely Accurate
Its As Economical to Operate as a 100-Watt Light Bulb
Its Low Initial Cost Makes It Possible for Every Batch Plant to Have the Advantage of the Use of the New, Improved, C & W Electronic Moisture Meter.

Eliminate those "too wet" loads that leave your plant before your batch operator knows that there has been a moisture change.

Eliminate the time and money wasted adding water at the job site and then remixing a load on expensive truck time if the batch is too dry.

Take the guess work out of making your concrete and really have control of your slump.

Install a C & W Electronic Moisture Meter in your plant and save both time and money.

Complete with installation instructions, only $569.00 F.O.B. San Francisco.

Your Inquiry Is Invited.

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We are Associate Members of The National Ready Mixed Concrete Association.

NATIONAL READY MIXED CONCRETE ASSOCIATION NRMCA

Portable Concrete Batcher Eliminates Costly Hauls, Speeds Plant Relocation

A portable concrete batching plant, recently introduced by the C & D Manufacturing Company of Perkins, Calif., should prove an ideal piece of auxiliary equipment for the established ready-mixed-concrete operator, and should also enable the small sand-and-gravel producer to enter the ready-mix field.

On projects located some distance from a permanent batch plant, this new unit, known as the "Ruby," can eliminate long, costly transit-mix hauls and can quickly be coupled to a truck-mixer and trailed to a site convenient to the construction job, or near a conveniently available source of aggregates.

The Ruby plant, entirely powered by electric motors, has a capacity of 35 cu. yd. of specification concrete per hour. A readily visible dial scale with special markers permits accurate weighing of the aggregates. The batch is charged into the truck-mixer simply by pushing two starter buttons on the operator's platform. A water meter, in full view of the operator, correctly measures the water. The bin is loaded by any type of front-end loader.

A front-end loader charging the portable batching plant. Note the location of the scale dial for maximum visibility.

Soon to be in production as a companion piece to the Ruby batch plant is a portable bulk-cement silo which likewise is towed on its own pneumatic tires, thus eliminating the necessity for sacked cement.

John Robert Wilson, 65, president of the Hartstone Concrete Products Company, Tampa, Fla., died recently in a Tampa hospital. He had been a company executive since 1952.

Basic Construction Materials To Open Plant in W. Virginia

According to George A. Johnson, plant manager, the big ready-mix concrete plant built at Ironton, Ohio, by the New York Coal Sales Company's Basic Construction Materials Division is ready to go into production. W. A. Rogers, of Chillicothe, Ohio, is general manager of the Basic Division.

Robert Patton of Columbus, president of New York Coal Sales, the parent firm, stated that Basic is interested primarily in three large construction projects in the Ironton area: (1) a proposed new Dow Chemical plant (2) an electric power plant to be built just west of Hanging Rock by the Ohio Power Company; and (3) the new four-lane U. S. 52 expressway from Hanging Rock to Chesapeake.

• Correction

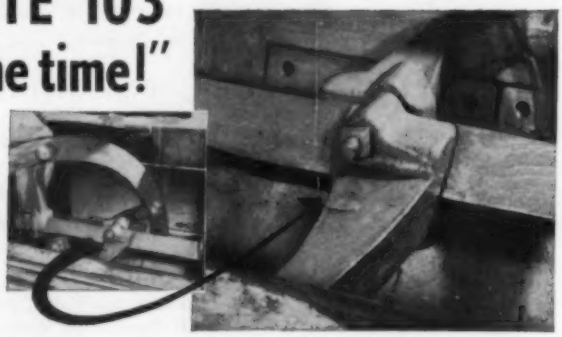
On page 151 of the August issue of the CONCRETE MANUFACTURER there appeared an item listing the various firms which are sponsoring an exhibit of concrete masonry panels at the General Services Building in Washington, D. C. It has been called to our attention that the full name of one of the sponsors—Marble Face Blocks, Inc.—was inadvertently omitted.

The Southern Materials Company plans to open a new ready-mixed concrete plant at Lynchburg, Va., according to Ray Wingo, district sales manager. It will supply concrete, sand, and gravel to contractors in the Lynchburg area. The plant will be managed by A. D. Preston.

"Cleaned with a whisk broom, putty knife and . . .

EDI-COTE 103 in half the time!"

says owner* of this 17 year old mixer that looks like new.



EDI-COTE #103 is a revolutionary new release agent that prevents concrete from bonding to mixer blades and parts. EDI-COTE #103 eliminates the use of air guns and sledge hammers in the daily clean-up. EDI-COTE #103 creates a non-hardening film which prevents the forming of a bond between concrete and metal. It adheres rigidly and will not dissipate due to chemical action or abrasion. One application of EDI-COTE #103 will remain effective throughout the longest working day. EDI-COTE #103 can be applied with brush or spray. Shipped in 55 gallon drums. 5 gallon cans available for trial shipments only. Order EDI-COTE # 103 today!

* Frank Erdman & Son, Milwaukee, Wisconsin

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For further information on EDI-COTE #103, see your NCMA Technical Bulletin No. 2, Attachment No. 1, March 3, 1955.

Another BESSER Booster*

*This is the 123rd of a series of ads featuring leaders of the Concrete Products Industry who are stepping up block production with Besser Vibrapac machines.

Las Vegas Block Plant Installs Two More VIBRAPAC Machines

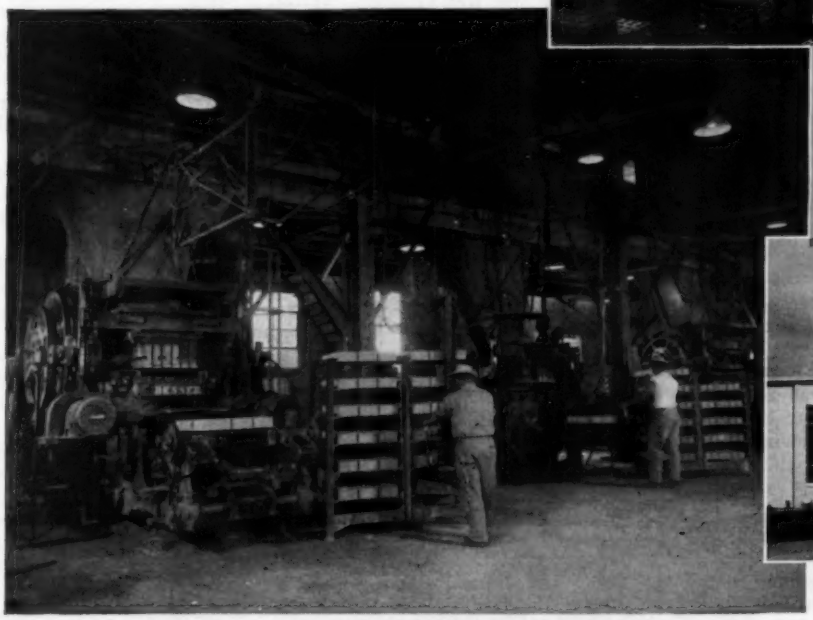
Cind-R-Lite Company, Las Vegas, Nevada, has had excellent results with their first Vibrapac machine purchased in 1946. This is evidenced by the fact the company installed two additional Vibrapacs during the past year.

Why does Cind-R-Lite prefer Vibrapacs for producing quality block? Let's ask H. O. Allen, General Manager. Mr. Allen states: *"This machinery is far superior to any block manufacturing equipment on the market to date"*. Currently, the three Vibrapac machines are kept busy producing cinder block. Some of the units are split and sold under the trade name of "Vegas Stone".

The company has kept pace with the rapid growth of the city of Las Vegas where the census has doubled in the last five years. The glamour hotels and motels of Las Vegas are all built with cinder block. The newest hotel, "Star-Dust", is using one and a half million 8 x 8 x 16 units.

These Cind-R-Lite executives have reason to smile. They are getting TOP production from their Vibrapac machines. Left to right, H. O. Allen, General Manager; Larry Allen, General Superintendent; and Karl Buker, Comptroller.

Exterior view of Cind-R-Lite plant. Note large stock piles of Vibrapac block, mostly 2-core units. 75% are made of volcanic cinder material gathered from a cinder cone located about 100 miles from the plant.



Three Vibrapacs in a row at the Cind-R-Lite plant. Fully automatic. No manual lifting. Off-bearer removes finished block with power hoist.

Mormon church in Las Vegas, constructed of 8x4x16 cinder block supplied by Cind-R-Lite.

Ask your nearby Besser Representative for Vibrapac literature, or write:

BESSER COMPANY • Box 131 • Alpena, Michigan, U. S. A.

Complete Equipment for Concrete Block Plants

A 8496-1PBC

BESSER VIBRAPAC

World's Leading Manufacturer of Concrete Block Machinery

R/x Ready Mix

By Harry F. Thomson

Size of Truck-Mixer Loads

COMMERCIAL ready-mixed concrete is a processed material. While it is in a plastic and unhardened state, it is sold as finished product, ready for use. The nature of the ingredients, their proportions, and the thoroughness of their mixing all influence the quality. As the responsibility for the concrete passes from the producer to the user upon delivery, it is important that all conditions of the character of ingredients, proportioning, mixing, and transporting are understood mutually by both parties.

Unlike other building materials which can be tested prior to being incorporated in the structure, the most important characteristic of concrete, namely compressive strength, cannot be tested until after a protracted period of hardening, which may range from 3 to 28 days or longer after placement, depending on the objective of the test. For this reason standards covering the equipment and its operation, as well as the quality of the concrete and tests for verifying the quality, are even more important in this field than in connection with other construction materials.

As ready-mix began to gain recognition as a practical method of serving concrete construction, many men —including producers, contractors, and supervisors—realized there was no standard of operation for this new field. Each producer operated in accordance with his own judgment with respect to dump trucks with central mixing, or dry-loading revolving drums with subsequent mixing. Various organizations, including the American Concrete Institute, the American Roadbuilders Association, and others, brought out specifications for operations; but it remained for the National Ready Mixed Concrete Association in 1941 to bring out an outline of Standards for Operation of Truck Mixers and Agitators which has been widely accepted by public and private agencies as indicating reasonable operating methods on which their own special requirements could be based. The N.R.M.C.A. standards have been revised from time to time as experience accumulated and improvements in the equipment arrived; but always with a conservative approach. The latest revision in September, 1953, was the sixth approved.

Two other standards are of importance to the ready-mix industry. They are the Specifications for Ready Mixed Concrete issued by the American Society for Testing Materials (current designation is C94-54T); and Truck Mixer and Agitator Standards of the Truck Manufacturers Bureau. The former is intended to serve as a purchase specification; it was developed by the well-known Committee C-9 on Concrete Aggregates. The current document is the result of several revisions.

Membership in the Truck Mixer Manufacturers Bureau is limited to makers of mixers and agitators, both revolving drum and open-top, whose products comply with the standards of the Bureau as regards sizes, cubic volume of each size, water-tanks, etc. This standardization of agitator sizes has eliminated the confusion which had existed previously as to the size of drum to mix satisfactorily a given yardage of concrete. The Bureau's standards are subject to approval by the directors of N.R.M.C.A.; the current standards represent the third revision, approved in September, 1953.

These three standards are not in conflict, as each serves a different function. The Association's standards cover the operation of truck mixers and agitators. The Bureau's standards deal with standard sizes, fixing capacities within limits specified by the Association. The A.S.T.M. C94 outlines requirements for quality of materials, proportions, and other factors affecting the quality of the concrete.

The size of load in a drum of a given volume which will be mixed into uniform concrete during the Association's minimum requirements of 50 revolutions, has been the subject of extended discussion throughout the industry for many years. The Association's original standards were drawn up when only horizontal-axis, long-cylinder drums were in use; these standards set the rated mixer capacity as 50 percent of the drum volume. This ratio was raised to 57½ percent a few years later, and has remained the maximum for mixer rating ever since. The maximum loading of an agitator carrying central-mixed concrete has continued through the years as 80 percent of drum volume.

For some time prior to 1952 many reliable producers had reported that in their own tests with modern mixers loads considerably larger than 57½ percent of drum volume had given strength and uniformity which were equal in all respects to loads of the standard rating size. After prolonged discussion the N.R.M.C.A. directors authorized the staff to conduct impartial tests with mixers of several manufacturers under various conditions of size of coarse aggregate, slump, loads of rated capacity and beyond, and other variable factors. The tests were conducted in the summer of 1952 at the University of Maryland; through the co-operation of the manufacturers there were available eleven different truck-mixers, rated at 2½ cu. yd. to 5½ cu. yd. (eight were 4½-cu. yd. size). The tests were discussed in this publication in April, 1953, page 156.

In discussing the final compilation of the tests, Stanton Walker and D. L. Bloem stated among the conclusions as follows—

"Based on a limited number of tests (92 full-sized batches of concrete were made), there was evidence that the 4½-cu. yd. mixers used in this investigation performed essentially as well when mixing an additional ½ cu. yd. as for capacity (rated) loads."

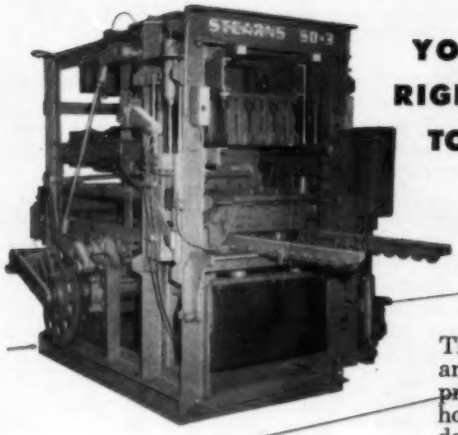
The report also stated that with materially larger overloads there was evidence of reduced mixer efficiency.

Giving effect to this conclusion, the 1953 revision of the N.R.M.C.A. standards contained the following provisions—

"Sec. 3. *Capacities* (a)—Normal rated capacities, expressed as percentages of the maximum permissible volume of the drum or container shall not exceed 57.5 percent for truck-mixing, 70 percent for shrink-mixing, and 80 percent for agitat-

(*Continued on page* 170)

IF YOU'RE AT THE CROSSROADS OF INDECISION...



YOU WILL MAKE THE RIGHT TURN WHEN YOU TURN TO

STEARNS

for your Series 50* Block Machine!

...for proven durability and dependability

These Stearns Series 50 machines (The Big 3*) chew up all kinds and types of aggregates from the mixer and vibrate it into precision sized, well compacted, even textured units, and holler for more. They're doing it from coast to coast. They're designed and built for stamina, *plus* top production of quality units. They thrive on two and three shift, around the clock operations, for that's where they "separate the men from the boys" in block machines. Built to take it and dish it out, for lowest downtime and lowest maintenance

. . . That's DURABILITY!

Stearns Series 50 Block Machines are built for the toughest schedules and are "always rarin' to go". They're massive, heaviest of any make or model in their price class. With positive cam and roller principle, cast steel cams, contour machined and flame hardened. With oversize shafts and anti-friction bearings throughout . . . coupled with automatic alemite oil mist lubrication, you're in full production at the push of a button!

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If you're having trouble with your present machine . . . due to light construction . . . glorified claims instead of facts, or your blocks are of poor quality, and it's hard to compete . . . accept our challenge, call your Stearns representative, or phone us collect for the nearest Stearns Series 50 in your area. Make your own comparisons, talk with the owner, but *YOU* be the judge! We'll wager your next machine will be a Stearns . . . Any one of the Big 3*.

ASK ANY OWNER!

*** THE BIG 3**

Model 50-3 makes three 8" x 8" x 16" or equivalent units per cycle. Maximum size pallet, 5/16" x 18½" x 26".

Model 50-2 makes two 10" x 8" x 16" or equivalent units per cycle. Maximum size pallet, 5/16" x 18½" x 20½".

Model 50-1 makes two 8" x 8" x 16" or equivalent units per cycle. Maximum size pallet, 5/16" x 18½" x 18½".

STEARNS

MANUFACTURING COMPANY • INC.

ADRIAN • MICHIGAN

COMPLETE CONCRETE PRODUCTS PLANT EQUIPMENT

ECONOMICAL TO BUY • PROFITABLE TO OWN

Lightweight Structural Concrete

Problems become routine operation when close control of moisture in aggregates is exercised

By E. L. HOWARD
and
W. E. MOULTON

Chief Testing Engineer
Pacific Coast Aggregates, Inc.
San Francisco, Calif.

In view of the increasing use of various lightweight aggregates by ready-mixed concrete producers—sometimes for floor or roof fill and other times for structural purposes—it appeared to us that the following article, published in the Journal of the American Concrete Institute June, 1955, contains many points of interest to producers who have possibly experienced difficulty of one kind or another in handling lightweight aggregates. We feel that suggestions contained in the article regarding gradation of materials, proportioning and batching, control of moisture, and job inspection will prove of real value to such operators.—The Editors.

IN downtown San Francisco engineers have planned and built an office building 210 ft. high with 458,000 cu. ft. of floor space. The steel frame structure required 22,000 cu. yd. of concrete for foundations, walls, and floors. Twenty-five of the 27 stories were placed using 15,000 cu. yd. of Haydite concrete. This report concerns the controls used and the test data accumulated on the lightweight concrete construction.

Batch Plant Operations Before each day's placement, the Haydite aggregates were transferred by conveyor belt from plant surge bins to the bunkers over the weigh hoppers. Haydite arrived in a semi-dry condition and was brought to saturation by the water-spray system installed over conveyor belts.

The batching plant is a two-unit premix plant. One unit of the plant produces only normal weight concrete. The unit used for Haydite makes normal weight concrete on days Haydite concrete is not produced. The aggregates are stored in five bins above each weigh hopper and four silos for cement are available. All aggregates are weighed automatically in one hopper with multi-beam scales. Cement is weighed separately; water and air-entraining agent are measured by volume. All concrete is premixed in 3-cu. yd. tilting mixers. These mixers (one in each batching unit) dump into holding hoppers from which the transit truck draws its load.

The Haydite placements, averaging 300 cu. yd., were made two or three times a week. Aggregates previously saturated were transferred to the batch plant bunkers as needed.

The transit trucks, with mixers turning at 3 r.p.m. hauled 6 cu. yd. of concrete. The trip through city traffic to the job site required 15 to 20 minutes. Street parking at the job site was not permitted because of traffic congestion. Trucks had to be timed perfectly to keep concreting going smoothly. A truck waiting station, manned by a dispatcher with a telephone, was established four blocks from the job, and trucks waited their turn to enter.

The first few placements were marked with a considerable backlog of loaded trucks at the waiting station. A delayed load lost slump and was the source of much irritation to inspectors and concrete placing crews. After a half-dozen placements, when traffic control and job unloading became more efficient, only a rare breakdown of handling equipment disturbed the smooth flow of concrete.

An inspector at the batching plant, with close co-operation of the batch man, observed each batch, making adjustments to maintain uniformity of quality. Of the 53 placements, batch weight adjustments were required during 37. From one to four adjustments of batch weights were necessary during each of these. At the job site a service man kept in touch by telephone with the batch plant and the waiting station. His reports kept the dispatcher and the plant inspector informed about the concrete on the job.

One section of the yard of Pacific Coast Aggregates, Inc., San Francisco, Calif. Bucket elevators carry Haydite aggregates to the surge bunkers. A truck used in hauling the Haydite is being unloaded.

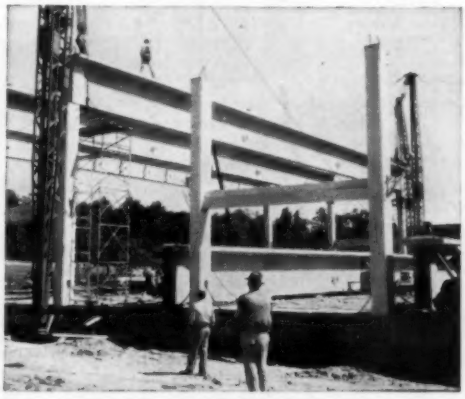
Materials Haydite aggregates were sampled on arrival at the batching plant. Gradings of Hay-

Senior High School Gymnasium, Greensboro, N. C.—L. B. Gallimore, Gen. Contr.; Arnold Stone Co. and George E. Newton and Son, Sub Contrs.

Concrete...clear span 118 ft.

THE roof framing of this gymnasium consists of seven prestressed concrete girders, precast on the floor and raised to position on columns cast in place at the same time. The columns are 120′ center to center of bearing. The girders have 118′ clear span above the playing floor.

For this design (which cost $10,000 less than the open steel truss alternate) a 2½″ slump concrete, 4500 psi at time of prestressing and 5000 psi at 28 days, was specified. As processed and delivered by truck mixers of certified design, capacity and water control accuracy, slump was uniform and strength exceeded specifications, reaching 4500 psi within a maximum of 6 days.



Girders are a modified T-shape, 73″ deep with 48″ top flange, 18″ bottom flange and 8″ web thickness except 18″ at ends which are 18″ full depth. Prestressing was by post-tensioning with 12 cables of 18 high tensile 0.190 diam. wires. 2″ camber built into girders was increased to approx. 3⅜″ by prestressing. Two 12-wire cables through the 18″ x 24″ supporting columns were tied to girders. Final packing of joints resulted in rigid frame for live load.

You have a right to insist on this Rating Plate. It certifies compliance with the high industry standards maintained for your protection by the Truck Mixer Manufacturers Bureau.

These manufacturers comply with Bureau standards:

BLAW-KNOX EQUIPMENT DIVISION
Pittsburgh, Pa.

CHAIN BELT COMPANY
Milwaukee, Wis.

CHALLENGE MANUFACTURING CO.
Los Angeles, Calif.

CONCRETE TRANSPORT MIXER CO.
St. Louis, Mo.

CONSTRUCTION MACHINERY CO.
Waterloo, Iowa

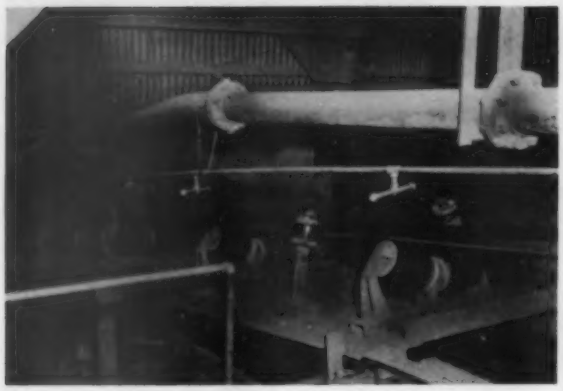
IMPERIAL CONSTRUCTION EQUIP. CO.
Melrose Park, Ill.

THE JAEGER MACHINE COMPANY
Columbus, Ohio

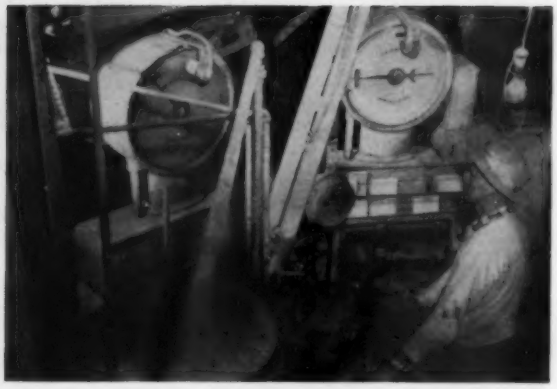
THE T. L. SMITH COMPANY
Milwaukee, Wis.

WILLARD CONCRETE MACHINERY CO. LTD.
Lynwood, Calif.

WORTHINGTON CORPORATION
Plainfield, N. J.



The water-spray system installed over a conveyor belt to saturate Haydite aggregate.



Haydite concrete was batched with this unit. The mix cards are placed so that they can be easily seen by the operator.

dite are shown as percentages passing a given sieve in Table 1. Because the specific gravity varies with the size fraction, these sieve analyses do not give a true picture of the relative distribution of particle size.

Table 1—Average Values of Test Data on Haydite Concrete Aggregates

U. S. sieves	Aggregate, percent passing			
	¾-in.	⅜-in.	Fines	Natural Sand
¾-in.	100			
½-in.	64			
⅜-in.	20	100		
¼-in.	7	76		
4		47	100	100
8		13	82	87
16		10	48	63
30		5	29	42
50		2	18	17
100			11	4
200			7	1
Specific gravity	1.35	1.66	1.82	2.66
Absorption, percent	14.1	16.0	12.0	1.70
Unit weight, lb. per cu. ft. loose	39	42	52	90
Moisture, percent	3.85	4.45	4.44	6.00

These materials were received in three sizes: ¾ to ⅜ in., ⅜ to ⅛ in., and minus ⅛ in. Specific gravities for design and control purposes were determined from the delivered materials, the larger material having the lower specific gravity of 1.35 and increasing approximately 0.25 with each smaller size. The Haydite aggregates were brought to saturation before use in the concrete, which meant an increase in water content of about 10 percent over the moisture on delivery. The success of this operation greatly affected the control of the concrete yield and consistency.

Natural sand fineness modulus was uniformly 2.87 and the moistures varied but slightly from 6 percent. The air-entraining agent was added to the water discharge line through an automatic dispenser. City water was used.

The specification requirements were for concrete weighing no more than 100 lb. per cu. ft. dry and having a compressive strength of 2,750 p.s.i. at 28 days. A maximum slump of 5 in. was required.

Proportioning and Control Proportioning was according to Recommended Practice for Selecting Proportions for Concrete (ACI 613-54). This method produced a workable and satisfactory concrete in all respects. Table 2 details the mix proportions that were used throughout the job. Adjustments made at the batch plant as materials varied insured delivery of the designed mix. Added water varied from 25 to 41 gal. per cu. yd., and averaged 35 gal.

Samples for the unit weight of hardened concrete were taken at the job site; all other samples were taken at the batch plant. For the purposes of control the unit weights were of great importance. They furnished the data for yield calculations and building weight estimates. Unit weights of hardened concrete averaged, when saturated, slightly more than fresh concrete but after drying met the specified weight requirement of 100 lb. per cu. ft. (See Table 3.)

Table 2—Mix Proportions for Haydite Concrete

Materials	Lb. for 1 cu. yd. Concrete	Percent of Total Volume
¾-in. Haydite	390 (SSD)	35.0
⅜-in. Haydite	440 (SSD)	
Fines, Haydite	220 (SSD)	7.8
Natural sand	960 (SSD)	21.6
Cement	620	11.7
Water	333	19.8
Air-entraining agent	4 oz.	4.1 percent air

Table 3—Haydite Concrete Test Data

Test	Average	Standard Deviation	Number Tests
Unit wt. fresh concrete	109.5 lb. per cu. ft.	5.70 lb.	182
Unit wt. hardened concrete, wet	111.4 lb. per cu. ft.	4.15 lb.	48
Unit wt. hardened concrete, dry	96.6 lb. per cu. ft.	3.70 lb.	48
Concrete yield per cu. yd.	27.3 cu. ft.	0.71 cu. ft.	182
Air percent by volume	6.7 percent	1.7 percent	22
Kelly ball penetration	5 in.	1.2 in.	182

Air content was very uniform as measured by the pressure meter. Only one very high air content was noted, and this on a day the Haydite aggregate was very dry. The measured air content of 6.7 percent may not have been all entrained air. Entrapped air varied with the absorption of the Haydite and accounted for some of the small variance in air content.

The air entrainment gave workability to the concrete and prevented segregation. Consistency was controlled by the Kelly ball test (Table 3). The average penetration of 5 in. is equivalent to about a 4½-in. slump. The standard 30-lb. ball was used. On other jobs a 20-lb. ball has been used with lightweight concrete.

Haydite moistures shown in Table 4 were taken at the weigh hopper. They include all the water in the aggregate. When the total moisture is greater than the absorption, a uniform concrete can be supplied. When the moisture is less than absorption, some of the mixing water is taken up by aggregate. The deviation in moisture became the biggest problem in quality control. Moisture changes were most serious after a delay or postponement of placing.

Table 4—Absorption and Moisture of Haydite

	¾-in.	⅜-in.	Fines
Average absorption, percent	14.1	16.0	12.0
Average total moisture at weigh hopper, percent	15.8	17.2	14.0
Average free moisture, percent	1.7	1.2	2.0
Free moisture limits, percent	0–6.7	0–6.2	0–7.0

(*Continued on page* 172)

Pipe Process Used to Make Prestressed Floor System

another ON THE SPOT report

APT utilization of the packer-head principle of making concrete pipe has been turned to good advantage by the Illinois Prestcrete Company, Plano, Ill., in producing a prestressed concrete floor or roof

By ROY L. PECK

system. The basic segments of this system are essentially concrete tile units 4 ft. long, made on a pipe machine, in a form having an exterior shape designed to accommodate the prestressed rods featured in the system. The ends of the units are ground, then butted under pressure, end-to-end, to form a continuous narrow slab of the required span. When these slabs are installed parallel and adjacent to each other, they form a flat slab of low dead and high live load capacity for many uses.

A special feature of this particular operation is the use of the heat from a gas space heater of 1,000,000 B.t.u. per hour capacity, which is carried through ducts to plenum chambers encircling the aggregate bins. This prevents freezing of materials and permits uninterrupted operation of the plant throughout the winter. The same heater furnishes heat at 100 deg. F. for curing the freshly-made units.

Prestressing of the composite pipe-section slabs was started in 1941, using pipe machines which were originally installed in a concrete pipe plant at South Beloit, Ill. Other new equipment was installed at the time, and in the interim many improvements have been made to bring the plant into its present daily production schedule of 3,500 to 4,000 sq. ft. of slabs. Two shifts per day are worked, the night shift making the units and the day shift assembling those units which have attained full strength into slabs for a particular job.

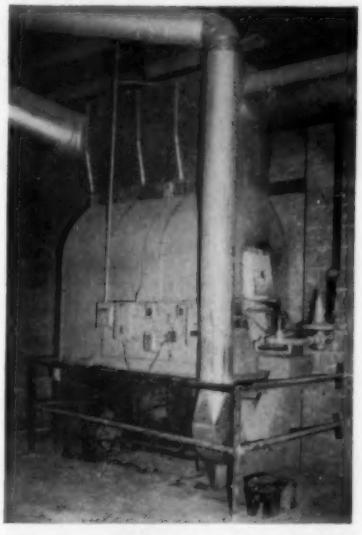
A typical pipe mix of very low slump concrete is used in the units; it consists of air-entraining cement, fine and coarse aggregates, and mason sand. This produces concrete of 6,500 p.s.i. after 48-hour moist heat curing and minimum yard storage of 30 days.

Cement is received in sacks by carload. Aggregates, delivered by truck, are dumped into a truck hopper from which they are carried by an 18-in. wide conveyor belt 20 ft. to the boot of a Standley chain-and-bucket elevator of 50 to 60 t.p.h. capacity. This elevator discharges into a distributing spout which can place materials into any of the three compartments of the 125-cu. yd. capacity overhead aggregate bin, or directly into the 20-cu. yd. bin set over the Kent No. 2½ continuous mixer.

This mixer discharges the concrete onto an inclined belt conveyor feeding to a transfer hopper, which in turn feeds another conveyor going to the molding machines. This two-stage conveyor operation with the hopper provides some leeway in case of a holdup in the molding operation. The first conveyor can be extended to a similar hopper and conveyor to serve a second molding machine.

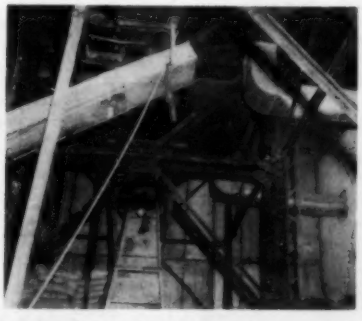
The molding machines are made

Crosby Schmidt, plant superintendent of Illinois Prestcrete Company, Plano, Ill.



This gas space heater provides 100 deg. F. heat for curing and drying aggregates and also heats the plant.

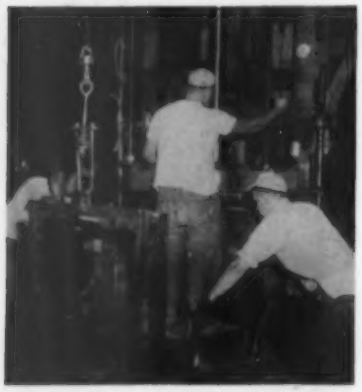
The continuous mixer (left) and the conveyor belts and transfer hopper for moving concrete to the tile-molding machine.



A view below the 125-cu. yd. 3-compartment aggregate bins, showing the plenum chambers and the heat ducts.

A side view of the tile-molding machine, showing the packer-head and one of the two mold boxes (right).

by the Concrete Pipe Machinery Company, Sioux City, Iowa. The packer-head process on these machines utilizes a revolving packer-head within the form to roll and pack the tile to proper density while the mold remains stationary. Concrete of semi-dry consistency (3 to 3¼ gallons of water per sack of cement) is thrown against the mold at high velocity by the wings, which form a part of the packer-head assembly. During molding the packer-head is raised about ½ in. per revolution, forming a smooth, compact inner surface as it revolves at about 250 r.p.m. It is not surprising that very dense, strong concrete can be obtained with this system of packing the concrete into all spaces of the outside form, irregular as these may be. The mix is so dry and the force with which it is packed against the outside form is so great that the freshly-made tile can be taken immediately to the curing room.



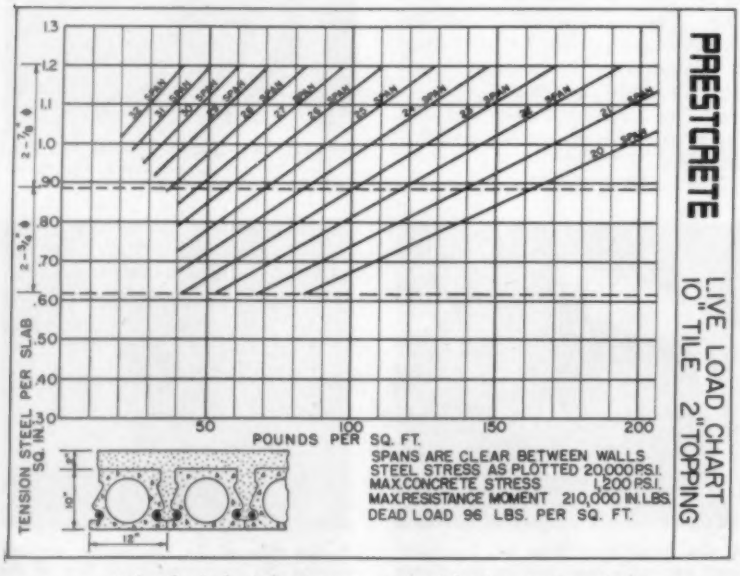
The turntable, the double mold form, and the off-bearer are shown in this view of the molding operation.

After being molded vertically, the form is turned to a horizontal position, and stripping takes place, the newly-made tile resting on 12- by 48-in. steel pallets. Two molds are on the machine turntable, to permit this operation.

Twelve 48-in. long tile make up a rack load, and 50 such racks can be placed in each of four kilns (20 by 44 ft. in area and 7 ft. high), permitting curing of 2,400 pieces of tile at a time. Curing at 100 deg. F. follows, with water added from spray nozzles installed in the roof of the kiln. The entire kiln area is sealed off tightly, and the heat and water spray continue for 48 hours.

At the end of this period the tile are removed from the kilns and formed into cubes. In the 8-in. depth of tile, 24 tile form a cube, and in the 10-in. depth, 16 tile are cubed. These are carried out into yard storage by means of the YT-40 Hyster and the Clark lift trucks and stacked three cubes high. Over 30,000 tile units are now in stock, the equivalent of about 100,000 sq. ft. of floor slab. Space is at a premium, and it is planned to increase the storage area in the future.

As stated, after 30 to 60 days of yard storage the tile have attained the required strength. They are brought into the plant with the lift truck, the oldest units in stock being taken first. The cube is set in front of the grinding machine and the tiles are placed in the grinder one at a time. The Besley machine grinds both ends of the tile at the same time. The odd lengths required to make up a slab of a particular length are dry-sawn on a Stonesaw, made by the Stone Machinery Company, Syracuse, N.Y.


PRESTCRETE
LIVE LOAD CHART
10" TILE 2" TOPPING
TENSION STEEL PER SLAB SQ. IN.
POUNDS PER SQ. FT.
SPANS ARE CLEAR BETWEEN WALLS
STEEL STRESS AS PLOTTED 20,000 PS.I.
MAX. CONCRETE STRESS 1,200 PS.I.
MAX. RESISTANCE MOMENT 210,000 IN. LBS.
DEAD LOAD 96 LBS. PER SQ. FT.

A live load chart showing spans and reinforcing areas required.

Top, left: The mold box form is stripped from the unit tile on the pallet and returned to the machine position.

Top, right: Nine tile on pallets being moved into the curing kiln area by a high lift truck.

Second row, left: Two of the four 20- by 44- by 7-ft. curing kilns. Total capacity is 2,300 tile. Another tier can be racked without difficulty.

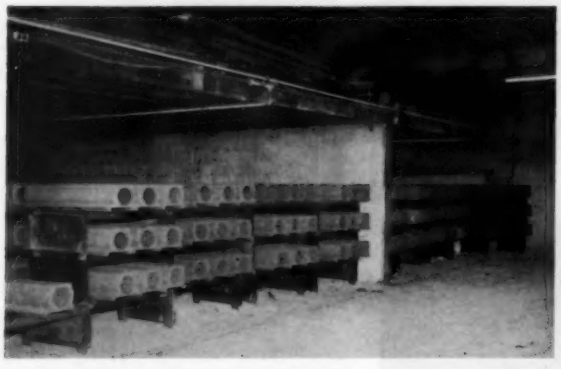
Second row, right: Here a tile is being ground on the double-faced grinder. Faces are ground slightly off parallel to effect a slight camber of ½ in. in a 24-ft. span of slab.

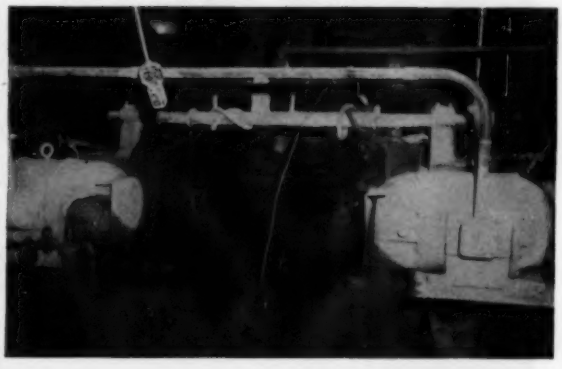
The Carborundum circular saw blade used on this machine is 22 in. in diameter, and is used to make a 4-in. deep cut across the tile. The remainder of the cut is broken by hand, as it forms the topmost end section of each slab. Formerly the cost of this cutting was about 10 cents per cut, but because the cost of the circular saw has been reduced from $10 to $6.80 each, and the life of the blade has been practically doubled, the cost is now only 3 cents per cut.

The ground and sawn tile are then assembled end-to-end on a table to form a slab of the correct span. This is actually a double table, which permits layout of the tile on one side while the reinforcing bars are being installed on the other side. The table is of sufficient length to take any assembly of tile required, and is supported on wheels and tracks for side travel.

Reinforcing bars of the proper steel area for the span are then placed, one on each side of the assembled line of tile units, on top of the bottom extensions of the tile. At one end the line of tile the bar is welded to an end plate; the other end of the bar is inserted through a hole in a similar end plate at the opposite end. These plates are 9/32-in. thick and either 3 by 10 in. or 3 by 12 in. in size.

Hydraulic tensioning equipment is used to place about 20,000 p.s.i. tensile stress in the high-strength bars of intermediate-grade new billet steel. This results in a maximum compression stress of 1,200 p.s.i. in



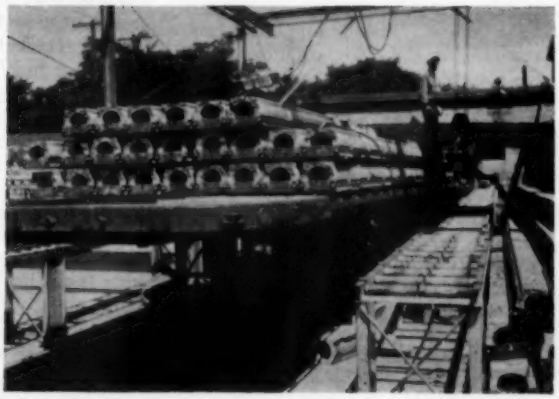


Above, left: Odd lengths of tile are dry-sawn on this 22-in. diameter masonry saw at a cost of about 3 cents per 4-in. cut.

Above, center: The double assembly table on cross tracks takes the end-ground tile, while the assembling of the slab is in progress.

Above, right: Reinforcing rods are welded to the end plates to hold the tension placed on the rods. Note the hydraulic tensioning equipment.

Right: Handling completed slabs from the roller conveyor to the truck bed trailer by means of a 2-ton capacity overhead gantry crane.



Tile units and cantilevered-overhang units in the storage yard. The latter have their lower faces finished with white cement and sand.

Two other Prestcrete products—sign post bases and wheel guard bases—in the curing area of the plant. The latter are utilized extensively in parking areas where movable curbs are necessary.

A job view of floor slab installation before topping concrete was placed. Note the framing around the opening in the floor.

An 8-ft. wide cantilever slab on a U.S. Army warehouse job.

the tile, varying according to the span and dead and live loadings for which the floor is designed. While this stress is held in the bars by the equipment, they are welded to the end plate, and that portion extending past the end plate is cut off. Each completed slab of one-tile width is then moved outside by means of a roller conveyor and lifted onto a flat bed truck trailer by a 2-ton capacity Chicago Tramrail overhead crane. The requirements of component slabs for each job are assembled at one time and go to the job site ready for installation.

Illinois Prestcrete handles all job installation details of its floor or roof systems, using Bucyrus-Erie H-3 and H-2 cranes for this work. Trucks are leased to haul the loaded trailers to the job site. Each 8-in. tile unit 4 ft. long weighs 160 lb., and each 10-in. tile weighs 250 lb. About 700 sq. ft. of 8-in. floor slabs make up a load, and 500 sq. ft. of 10-in. slabs can be hauled on a load.

The company has found it feasible to haul to jobs within a radius of 275 miles from the plant. The average span of floor is now 24 to 26 ft., but this is gradually increasing. School jobs form perhaps 60 to 75 percent of the work in which this type of floor or roof has been used —in fact, the company has had over 100 such jobs in the last five years. These include the Villa Park Junior High School, Villa Park, Ill., which required over 73,000 sq. ft. of Prestcrete slabs, and the De Kalb High School, De Kalb, Ill., where over 60,000 sq. ft. of slabs were installed.

Extending cantilevered slabs for balconies or other overhanging construction can be built with the Prestcrete system. This type of floor will require the use of negative steel as required for each slab, to take a share of the tension stress introduced by the cantilevered condition. Several such installations have been made on warehouse or similar jobs.

Other concrete products of the plant include sign posts and parking curbs. There is a growing demand for the latter, which provides a strong, durable concrete guard useful in parking areas; it can be shifted to different positions according to demand or changes.

Karl C. Schmidt is president of Illinois Prestcrete Company, and Crosby Schmidt is plant superintendent.

Rx Ready Mix

(*From page* 162)

ing; in the case of truck-mixing, a volume of concrete 10 percent greater than the normal rated capacity of 57.5 percent of the volume of the drum or container may be mixed (i.e. 63.25 percent), if adequate mixing of such increased volume is guaranteed by the manufacturer and if additional mixing is done as hereafter specified.

"Sec. 5. *Mixing Time* (b)—If the batch is greater than normal rated capacity but not more than 10 percent greater, the number of revolutions of the drum or blades at mixing speed shall be not less than 70 nor more than 100. All revolutions after 100 shall be at agitating speed."

The latest revision of the Standards of the Truck Mixer Manufacturers Bureau, also approved in September, 1953, included the following two sections—

"Sec. 5. *Sizes*—The following sizes shall be standard:

Normal Rated Capacity in Cubic Yards of Mixed Concrete when used as:

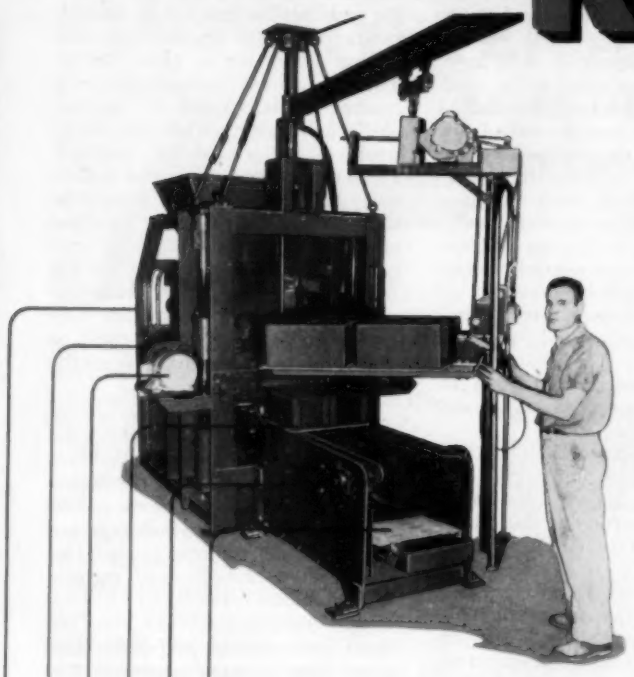
Mixer	Agitator
2½	3¾
3	4¼
3½	5
4½	6¼
5½	7½
6½	9
7½	10¼

(*Continued on page* 180)

Win with KENTWIN

and its

ADVANCED FRONT PALLET RETURN



To win today's battle against stiff competition you must get large output of quality blocks — at low cost for labor and power — from a relatively inexpensive machine — requiring a minimum of maintenance.

This was our aim in developing the plain pallet machine and results obtained indicate that we have attained our objective.

KenTwin's are fully automatic, one man off bears green block and returns empty pallets — no lifting — off bearer merely guides the power hoist.

Self contained pallet return unit can be attached to KenTwin Block Machines now in use.

You get fast continuous production of high quality block with easy moving hydraulic system.

Heavy duty high starting torque dual motor vibration electrically braked.

Precision electronic sizing guarantees uniform blocks at all times.

Heavy duty steel welded frames guarantee perfect alignment of machine at all times.

Electric and hydraulic power are combined in an automatic cycling machine that requires only one man to obtain maximum output.

Strong, accurate blocks are produced by a combination of hydraulic pressure and dual vibration.

A versatile machine which can be fitted to handle any commercial pallet.

Simplicity and accessibility make cleaning fast and easy.

There are too many advantages to describe in a single advertisement so write for literature now.

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The KENT MACHINE CO.
CUYAHOGA FALLS, OHIO
Manufacturers of
CONCRETE PRODUCTS MACHINERY SINCE 1925
DIVISION OF THE LAMSON-SESSIONS CO.

Send Information Regarding KENTWIN with Front Pallet Return

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Address _____

City _____ *State* _____

Lightweight Concrete

(*From page* 166)

Table 5—Compresive Strengths of Haydite Concrete

Average p.s.i.—28 days	3410
Standard deviation, p.s.i.	349
Number of tests (average of three cylinders each)	68

Aggregate previously saturated had opportunity to lose a portion of its moisture before concreting was resumed.

The compressive strength data shown in Table 5 are from those tests made by Pacific Coast Aggregates and were taken on each day's concreting. These cylinders showed an average compressive strength of 3,410 p.s.i and evidenced concrete 600 p.s.i. more than the required compressive strength. The percent of variation for this group of compressive tests was 10 percent.

Tests made during each placement were the basis for mix control adjustments. From the unit weight tests of fresh concrete the yield of the nominal cubic yard can be calculated. The yield averaged 1.1 percent over the designed 27 cu. ft., the yield efficiency can be credited to the careful control exercised at the mixing plant. Mix adjustments were continually made to maintain the actual volume at the nominal cubic yard. Estimations of batch volume were made at the calibrated holding hoppers at the batch plant and on the job about every 100 cu. yd.

For the whole job 15,247.5 nominal cu. yd. were delivered. By the calculated yield 15,431 cu. yd. were actually batched. This is 173.15 cu. yd. (1.2 percent) over the nominal yardage. Only 8,453 cu. yd. of concrete were checked by volume measurements in the job receiving hopper. In this case the percent accuracy of yield was 0.1 percent.

Conclusion 1. Those close to this job are convinced that good lightweight concrete is made when the aggregates are saturated. Even with proper mix adjustments, uniformity of consistency and yield could not be obtained with dry aggregates.

2. The plant inspector must have authority to adjust mixes as the need arises. On this job some 15 combinations of weights were furnished the batch man. As the concrete visibly changed, the appropriate batch weights were used until accurate checks and adjustments were made.

3. The Kelly ball is an efficient tool to measure and control consistency of lightweight concrete.

4. Air entrainment greatly improves workability and prevents segregation.

5. Compressive strengths can be obtained comparable to sand and gravel aggregates.

6. The standard ACI 613-54 water-cement ratio tables for air-entrained concrete can be used safely for mix proportioning, but better than average inspection is necessary to keep Haydite concrete within specification limits. Extra care must be taken with the control of moisture of aggregates, the batching, mixing, and delivery of the concrete.

Using careful inspection and control as described in this report, the problems expected with Haydite concrete become routine operation.

Other Lightweight Aggregates The author's experience with rounded aggregates has been in the Central Valley areas of California where the summer sun dries out stockpiled material. Long hauls in summer heat in transit mixers add to the control problems.

As aggregates dry out, much of the mixing water is absorbed by the lightweight material, resulting in dry loads of concrete on the job. Pre-saturation of the aggregates has been difficult to maintain in storage, but it is essential to proper workability control. The rounded particles of Rocklite and Basalite flow and move with greater ease and require less total mixing water for a given slump. These apparent advantages over crushed particles make the "gravel-like" lightweight aggregate more sensitive to workability changes. These rounded materials tend to float away from the heavier mortar in wet mixes and ravel in the handling chutes in dry mixes. The men who handle lightweight concrete for the first time almost always want the concrete too wet. Workability control must be effective and rapid to maintain the "just right" mix on the job.

Natural pumice aggregates are not presently in general use in structural concrete in this area. The authors have been associated with the inspection and control of pumice concrete in housing units, office buildings, and similar smaller projects. In each case the yield, workability, and segregation problems common to all lightweight concrete have been more difficult to overcome in pumice concrete than in other materials. The very high absorption of the pumice aggregate gives the most trouble. Saturation of aggregate and longer mixing periods were the simplest aids to better control. Measuring workability of pumice concrete was never accomplished in terms of slump.

It was found that a practiced operator could "feel" the workability by forming a handful of concrete into a ball and observing its cohesion. Laboratory trial batches were never equaled in the field because of these handling problems.

Natl. Assn. of Homebuilders Announces Convention-Show

Plans have been announced by the National Association of Home Builders for a major expansion of its annual convention and exposition, to be held in Chicago from January 22 to 26, 1955.

The Chicago Coliseum, one of Chicago's largest showplaces, will add 200 extra exhibit spaces and a meeting hall accommodating 2,500 persons to the show's facilities; and, as in the past, the show will also occupy all available meeting rooms and exhibit space in the Conrad Hilton and Sherman hotels.

The expansion will provide exhibit space for a greatly increased number of manufacturers of building materials and home equipment; but despite the increase in space, heavy advance requests indicate a sellout.

Exhibit highlights at the Coliseum will include new displays of light construction equipment and power tools.

Emphasis throughout the five-day meeting will be on financial problems, merchandising, and building research.

Silver Creek Brikcrete Manufacturing Company has begun operations at its new concrete brick manufacturing plant at Silver Creek, Ark.

Concrete Products Shipments In Canada Increase in May

Shipments of all kinds of concrete and cement products climbed in Canada during May from the corresponding month last year, the bureau of statistics reported.

Concrete brick shipments rose in May to 13,580,595 from 6,959,231 while gravel block shipments increased to 10,201,702 from 7,594,537 during May, 1954.

The National Concrete Masonry Association has issued a fourth bulletin on the carbonation of concrete as a part of a new service for its members.

Here's How HYSTER® *PLANNED* MATERIALS HANDLING SAVES TIME AND MONEY in concrete products plants

Here are typical examples of how Hyster Industrial Trucks are helping to make *tremendous* savings in materials handling costs in *concrete products plants.*

Whether you are now using lift trucks, or haven't ever used industrial trucks of any kind, your Hyster Dealer is ready to help you achieve cost reductions. Because he keeps abreast of the materials handling problems and improvements, he has helped many concrete products plants realize more profit from their operations. *Why not call him today* and take advantage *of his specialized services? Materials Handling Trucks from 1,000 to 30,000 lb. capacities.*

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1. PLANNING. Your Hyster Dealer will plan your materials handling operation from scratch — or will analyze your present system to see if it can be improved.

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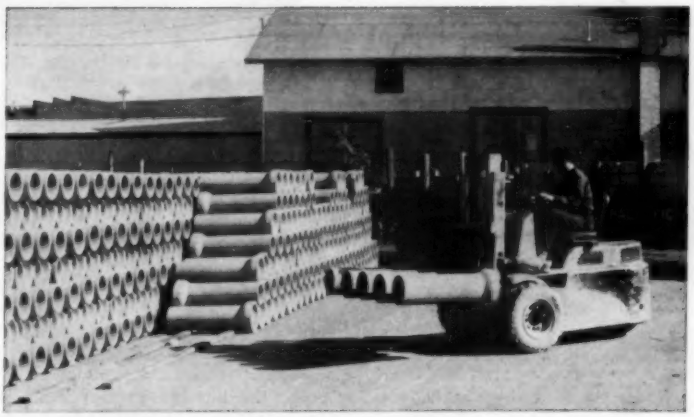
3. THE RIGHT SERVICE—ample spare parts stock, shop facilities, factory-trained mechanics and an efficient field service that keep your Hyster lift trucks going on your job, wherever your job might be located. Hyster trucks are noted the world over for their low downtime.



CARRYING FIVE CONCRETE PIPES at the same time, and storing them seven high in one operation. Shortcuts like this help to reduce cost of handling heavy products.

THIS HYSTER XA-60 HAULS FULL RACKS of green blocks from block machine into kilns. Removes cured block from kilns to yard storage and truck loading.

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Stockton Bldg. Materials Receives 400 Visitors At Opening of R.M.C. Plant

Nearly 400 persons, most of them intimately connected with the construction industry in the Stockton, Calif., area were among the guests who attended dedication ceremonies recently of the new ready-mix plant of Stockton Building Material Company, a subsidiary of the Calaveras Cement Company, San Francisco, Calif.

The plant, a C. S. Johnson fully-automatic Octo-Bin installation capable of batching 150 cu. yd. of concrete hourly, is said to be the largest automatic installation of its type in the West. It replaces an older and smaller plant on the premises which has since been dismantled.

Fabrication of the entire installation took place in the Johnson Company's West-coast branch plant, recently established in Stockton. Oversized octagonal-bin compartments can store 775 tons of aggregates, and 6 sizes are usually carried to permit the company to batch concrete to any conceivable specification. The centralized cement-storage tank has twice the usual capacity of a plant of this type and size, and can contain 650 bbl., divided for two two types of cement. It is kept filled by way of an 85-ft. enclosed bucket elevator and distributor spout.

Initially, at least, and because of the large cement-storage capacity within the plant itself and availability of cement from the San Andreas plant at Calaveras Cement Company a few miles to the east, no auxiliary cement silos were erected alongside.

The new ready-mix plant of Stockton Building Materials Co. Aggregates conveyor is 252 ft. long on centers; the cement elevator (right) rises 85 ft. above ground level.

The large fleet of bulk-cement carriers of the Calaveras company can truck in cement of any amount on short notice.

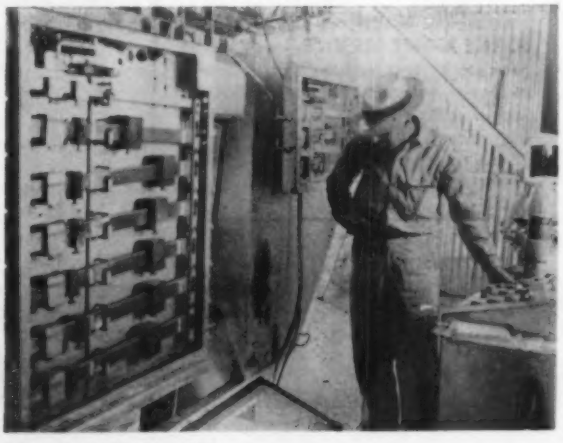
Aggregates are purchased and delivered in bottom dump trucks and trailers which discharge their loads into a 25-ton hopper. From the hopper, the sand and gravel is fed, *via* a Johnson tunnel gate, to a 24-in. by 252-ft. inclined belt conveyor running up to the top of the new batch plant. The belt, a Goodyear Style B with rayon carcass, rides on Barber-Greene rolls and idlers. A pivoted distributor controlled from the ground diverts the flow of aggregates into the proper bin compartment.

Both the cement and the aggregates are weighed and batched automatically, control being entirely by push-button. The concentric arrangement of the material flow permits the envelopment of the cement in a "sheath" of aggregates to minimize dusting, at the same time intermixing the ingredients thoroughly to ribbon-feed them into the waiting truck-mixer below. Water is measured by a Trident meter and introduced into the batch through a 3-in. valve.

Fred (Buzz) Winkler, formerly vice-president and manager of Stockton Building Materials Company, was recently named president, succeeding William Wallace Mein Jr., who will now devote all his time to his activities as president of the parent concern, the Calaveras Cement Company.

Construction is under way of a new $100,000 plant at Crosbyton, Tex., for the newly formed Superior Pipe and Supply Co., which will be used for the manufacture of concrete irrigation pipe, aluminum surface pipe, and other irrigation supplies. Don Anderson is president of the new firm, B. M. Jones is vice-president, Patsy Moore, secretary, and Russell McCurdy, treasurer.

Photo taken on the batching floor of the new plant on the day of dedication. Left to right: Dean de Carli, mayor of Stockton; George Ernest, president of the Stockton Chamber of Commerce; W. W. Mein Jr., president of Calaveras Cement Co.; Fred Winkler Jr., president of the Stockton company.



Operator at push-button control board of the fully-automatic plant. Aggregate scale levers at left, cement scale center, water meter at right. Batching operator observes loading of truck mixer through window below.

DOW

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Transit-mix companies find 25-lb. bag an accurate measuring unit

Concrete construction is high-speed production. But an outmoded process can wreck tight schedules. Days are lost. Labor idles. Dowflake® (Dow calcium chloride 77-80%) is one way to insure fast work. Setting time is a case in point. At 25° concrete takes 6 weeks to reach a strength of 2000 psi. Time is wasted. Costs go up. Add 2% of Dowflake and time is slashed to 7½ days. Concrete is more workable. Its ultimate strength is greater. At any temperature it will set stronger faster with Dowflake.

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Keep ahead of tight schedules. Increase concrete strength and setting speed. Do it the easy way with Dowflake in the 25-lb. bag. Write to THE DOW CHEMICAL COMPANY, Dept. IN 911T-1, Midland, Michigan.

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DOW

CONCRETE PIPE — a consultant's viewpoint

A paper presented at the annual convention of the American Concrete Pipe Association in Boston, March, 1955.

By MILES N. CLAIR
President
The Thompson & Lichtner Co., Inc.
Brookline, Mass.

CONCRETE pipe are used throughout the world and have in general given excellent service under a wide variety of conditions and requirements. Improvement in quality, reduction in cost, and increased use are dependent on recognition of the causes of trouble, development of process, continued research, and designs for new uses. It is intended herein to discuss briefly some of these matters and to make suggestions based on experience with the use, design, manufacture, specifications, inspection, and testing of concrete pipe.

Properly made concrete pipe that have not fulfilled expectations in most cases have failed either structurally or by chemical attack. Structural failure normally results from inadequate plans and specifications, due to lack of proper consideration of local conditions on the part of the designing engineer or to improper installation of the pipe by the contractor. The American Concrete Pipe Association's *Concrete Pipe Handbook* gives much information to guide the designer.

A large amount of experimental work has been done on the subject of strength of pipe as installed under various conditions. The new science of soil mechanics has developed much of value which should be considered in the installation of concrete pipe, and in particular relative to the use of compacted fills under and over pipe. Specifications state that the material under the pipe shall be compacted. The question naturally is, to what compaction and how measured?

In other cases the specifications require that the bottom of the trench is to be excavated to fit the curve of the pipe. What is the compaction of such an excavated bedding? It can be anything, and differential settlement may result in disastrous effects on the installation. Consideration should be given by designers to the use of definite standards of compaction for bedding pipe to minimize differential and total settlements. The control of the backfill likewise, is important, not only relative to the pipe itself but also to the way in which the settlement may affect other structures or roads.

. . .

Unsatisfactory service of pipe subject to chemical action often indicates a failure of the designer to evaluate fully the situation or overselling on the part of the producer. Attention should be given to the question of protecting the concrete against the effect of new conditions of use, not only to maintain the market but also to provide new markets for pipe. Concrete can be protected from chemical attack of the usual liquids carried by the pipe by applying proper coatings, and the new plastic coatings are of particular interest. There are many cases where inexpensive coatings of coal tar pitch or silicates will greatly improve performance.

All the trouble with pipe, however, is not the fault of design and installation. Some is due to faulty manufacturing and handling procedures. Blisters, pockmarks, misplaced steel, cracks, soft surfaces, and broken bells or spigots are causes of trouble. The standard specifications give limits, but all such specifications are minimum requirements and not necessarily representative of desired or maximum quality. Pockmarks, sandstreaking, soft surfaces, and blisters are not usually mentioned in the specifications; yet there can be no question that they are not desirable and probably are actually deleterious to durability and other desired properties. Pockmarks due to air and water voids are subject to correction by mixture and material modification and particularly, by the use of correct types of form oils or lacquered forms. Sandstreaking is a result of an improper mixture or gradation of the fine aggregate. Soft surfaces may be the result of inadequate finishing and curing, or improper mixtures. Blisters relate to mixtures, materials, and position in curing. Although solutions have been found for these troubles in specific cases, much needs to be learned as to their effect on the quality of the pipe and how to eliminate them. Research on these matters, with the support of A.C.P.A. and in co-operation with other groups, is suggested.

Pipe is sometimes damaged in handling and transportation, and the damage does not always become apparent until after the pipe is installed. Methods that adequately support the pipe in lifting it, the use of sufficient blocking, ties and cushioning on the transportation vehicle, and care in unloading and piling are vital to prevent damage. Educating personnel in the importance of care in these matters and standardization of procedures will help.

Concrete pipe has its competitors, and in competition one important factor is cost. Therefore, economy of production is important. The factors that affect economy are labor, materials, and transportation. Mechanization is one of the answers to high labor costs. Another is training and instruction of personnel, so that they understand thoroughly the factors affecting quality. Material costs will be reduced if an adequate study is made of the qualities of available sources making for economy of mixtures.

There is a wide range in the quality of cement, as well as aggregates. Uniformity of quality of materials will allow minimum cement content. Likewise, uniformity of process will further reduce the factor of safety that must be included in mixture design. It would be well for the producer to have made every few years an independent review of his procedures and methods. Longer curing periods with correspondingly lower cement content may well be considered for stock items. Thinner shell sections with higher concrete strengths may be more economical than thicker sections. Economical use of forms and the desirability of

production for sales from stock, as well as the many advantages to the consumer of standard quality pipe, make the use of such standard pipe an objective to be worked for at all times. It is obvious, however, that in many cases standard specification pipe will not meet the job conditions. Special sections may be necessary for particular uses in order to meet competition and these should be considered and used where they are necessary, e.g., for pipe to be jacked through a fill.

Standard specifications are of great value, and there can be no question that the largest part of all concrete or reinforced concrete pipe is specified in terms of the applicable A.S.T.M., A.A.S.H.O., and federal specifications. There is, in general, no great difference in the requirements of these specifications, and their wide use indicates that they are reasonably satisfactory. However, attention should be given to certain facts.

Curing, for example, is not mentioned in the Standard Specifications for Concrete Sewer Pipe in A.S.T.M. Designation C 14-41, A.A.S.H.O. Designation M86-49, or Federal Specifications SS-P-371. It is also omitted in the Standard Specification for Reinforced Concrete Pipe, A.S.T.M. Designation C 75-41; but it is included in the corresponding A.A.S.H.O. Designation M 87-49. Both A.S.T.M. C 76-41 and A.A.S.H.O. Designation M 87-49 Standard Specifications for Reinforced Concrete Culvert Pipe include sections on curing. It seems apparent that curing is important for the quality of the pipe and that it should therefore be specified for all kinds of concrete pipe. The methods (when specified) are (a) steam curing, (b) water spray curing, and (c) saturated cover curing. Consistent with practice in other fields of concrete use, the specifications should permit the use of the membrane type of curing compound that can be sprayed or brushed on. Such a method would often be cheaper and superior to the use of the saturated cover method, in which constant attention must be given to see that the cover is kept wet.

Strangely, the requirements for curing do not include any provisions relative to low temperatures. Trouble may occur due to freezing or thermal shock, and severe damage may result if pipe are cast out of doors and inadequate attention is given to protection. Damage will also occur if pipe are moved after steam curing to sub-feezing temperatures.

All the specifications include requirements relative to the quality of aggregates, which is, of course, desirable. However, it is debatable whether the gradation sections of the standard specifications apply to many mixtures used for concrete pipe manufacture. Economy of mixtures through the use of locally available aggregates often indicates the use of gradations not in conformance with the usual standards. The important factor is uniformity of quality, including gradation.

In many cases a cause of disagreement between the producer and the purchaser is the absorption test. It is probable that, aside from improper testing technique, the condition of the sample used for the test is most important. C14-41 states in part, "Each specimen shall have an area of 12 to 20 sq. in. as measured on one surface of the pipe, and a thickness equal to the full depth of the pipe shell, and shall be free from visible cracks." C75-41 and SS-P-371 state about the same thing, except that the specimen shall have an area of 16 to 24 sq. in. A.A.S.H.O. T 33-49 gives more detail, as follows: "The specimens shall be sound pieces, with all edges broken and shall be free from observable cracks, fissures, laminations, or shattered edges." The practice of taking samples by simply breaking out pieces and leaving shattered edges is the principal cause of the trouble. The only way to avoid this is to take either core samples or to cut out the pieces for testing with a concrete saw.

There is also another factor, that of the variation in area of the cut surface for a given area of sample, as affected by the variation in shape. Sawed samples would have a larger area of cut surface than that of a cored sample of the same surface area. A square sawed sample would have a smaller cut surface than a rectangular sample. Therefore, the results of the absorption tests may be markedly different, since the variation in cut surface between a core and a square is over 10 percent. The variation between a core and a rectangle could be over 50 percent. The cored sample gives the least cut surface and would, therefore, be closest to the actual condition of the pipe. A definite specification of a 5-in. diameter core is therefore recommended.

The cost and lack of available equipment for making crushing tests of large-size reinforced concrete pipe is wisely provided for by permitting (by agreement between the purchaser and the manufacturer) the acceptance of pipe on the basis of tests of the concrete and a check of the reinforcement. The thought is that the concrete tests are specified to be made in 6- by 12-in. test cylinders made from the concrete used in the pipe and manufactured and cured under identical conditions with the pipe.

A little consideration of the methods of making the pipe and of the relative volumes and shapes leads to only one possible conclusion. Such specified conditions of fabrication and curing can not be achieved in the test specimens. Cores or sections cut from the pipes will give samples of the actual concrete, and such procedure should be specified. Core samples will provide the better type of specimen. The compression testing of such samples, for results that can be duplicated will require grinding to plane parallel surfaces if the concrete strength is in excess of 6,000 p.s.i. The large variation in height-diameter ratio which will occur because of the various pipe thicknesses makes it desirable to study further the effect of the factors now used and given by the A.S.T.M. specifications.

The tables of minimum three-edge bearing strength values stop at 72-in. diameter pipe. The usefulness of the specifications would be greatly increased and much discussion of the strength to be assigned to the larger pipes would be avoided if values were given for the larger diameters.

Inspection of concrete pipe is another factor that causes some discussion between the producer, engineer, and contractor. Any outsider in a production plant, even under the best of conditions, interferes with the efficiency of the operations. Therefore, producers prefer that inspection be confined to the finished product, ready to be shipped. A product made with concrete can not, like steel, have its ultimate characteristics determined by a relatively simple and quickly made analysis. The quality of the materials which may affect strength and durability can only be readily checked for concrete while it is batched. The check may be largely by visual comparison with acceptable tested samples, by actual tests such as for organic contents, and by prior testing such as for cement. The producer should also have this part of inspection done for his own protection and may, therefore, properly be required to pay for it, although it is done by

(*Continued on page* 180)

Now ...from BERGEN...

a GREAT NEW Combination

loaded with powerful, high-production features

THE TRI-MATIC

- New design, speed-contoured cams
- Improved, fully automatic Height & Density Control
- Equipped with latest Bergen Master Control Panel centralizing all controls in one unit . . . designed for floor mounting to eliminate vibration
- 10 h.p. motors with magnetic self-adjusting brakes
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THE FRONT PALLET FEEDER

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- No auxiliary power . . . driven by block machine mechanism
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BERGEN MACHINE & TOOL CO., INC., NUTLEY, NEW JERSEY

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Cradle Tile Has Bright Future In Septic Tank Drain Fields

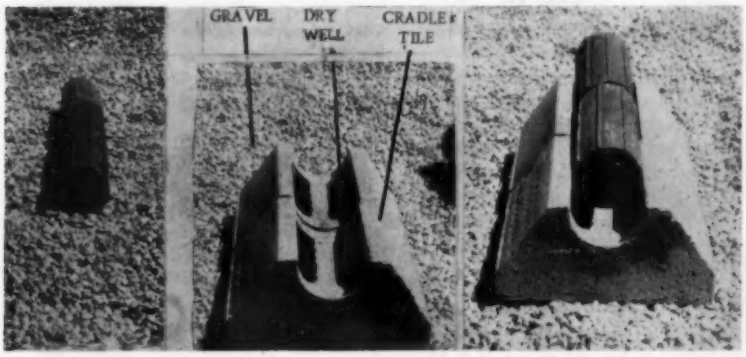
AN entirely new adjunct to the installation of concrete tile in drain fields, for carrying off the overflow from septic tanks in sewage disposal, is a conception of the Cradle Tile Company, Opa-Locka, Fla., in the new cradle drain tile the firm has introduced.

In the mushroom growth of housing within driving range of urban centers the septic tank method of sewage disposal has been widely used in sections where city sewage disposal lines have not yet been extended to these outlying areas.

Heretofore, for lack of a better way of maintaining the drain tile in position, these have been laid on an underground bed of crushed stone or gravel. Careless installation, settlement of the bed, broken tile, or other faults have too often caused the tile to become clogged at the joints with solids and grease, resulting in a failure of the system and necessitating in many instances an expensive re-installation of the bed. Because of board of health requirements as to the minimum areas of land necessary for such drain fields, the small-lot owner is often faced with a serious problem.

Plant view at Cradle Tile Company, Opa-Locka, Fla., showing the manufacture of concrete cradle units for supporting drain tile.

The originator of the cradle tile, Charles G. Minton, felt that if the concrete drain tile could be adequately supported and held in place, no clogging would occur. He designed a hollow cast concrete unit of V-shaped cross-section, the base of which is 14 in. wide and, 12 in. long, having a circular groove at the top of the 8-in. high block in which the 4-in. (or larger) diameter drain tile would rest. The space inside the hollow cradle tile provides a 2½-gal. dry well below each joint in the drain tile. These tile are usually 11½ in. long and 4 in. or more in diameter. The ½-in. difference in length between the drain tile and the supporting cradle tile provides adequate space for drainage into the interior of the cradles and from there into the surrounding gravel bed. The drain tile is laid so that the joints fall in the center of the cradle.



These views show the conventional drain tile on a gravel drainage bed, the new cradle tile unit, and two units installed.

From inspections of many installations of cradle tile, particularly in Florida, it is claimed that some health authorities have permitted a reduction of some 40 percent in the minimum area required for standard septic-tank drainage fields when the drain tile are so supported. With installation costs of about 30 cents a foot—about the same as the cost of placing conventional drain tile in a gravel bed—the method would appear to be economical insurance against a possible haphazard installation which might fail. In addition, it is claimed that cradle drain tile

A cradle tile drainage field before covered by addition of earth fill.

will use 75 percent less ditch footage, increase seepage area, render longer service, and that it can be used on small as well as large septic tanks. In addition, it will reportedly inhibit root growth, another hazard to drain field tile.

The manufacture of the cradle tile makes use of a comparatively simple molding machine which consolidates the relatively dry mix with vibration and pressure using the minimum of labor. The mix used in most concrete block plants is ideally suited to making cradle tile, and standard racks can be employed to convey the units to existing curing facilities. The machine utilizes a ½-hp. motor for vibration, pressure being applied manually through lever action.

Forms or mold boxes for making the cradle tile are constructed of metal sheets bent into the circular form of the cradle supporting the drain tile. Metal cores shape the interior of the two inside dry wells. A one-bag batch makes about 24 cradle tile, and the machine used by the originators will produce about 50 to 60 tile hourly, depending upon whether the operation is a one- or two-man setup, and upon the method used to mix and convey the concrete into the mold box.

This portable demonstration machine, mounted on a trailer, shows the method of producing cradle tile.

The two partners in the Florida firm, Mr. Minton and James H. Nelson, hold the exclusive rights to manufacture the cradle tile in the Miami area. The machine for its manufacture, the molds, and the cradle tile itself were designed and patented by Mr. Minton's father.

The equipment is being leased on an exclusive territory franchise throughout the country. It is specially offered to concrete products and septic tank manufacturers, who already have mixing and curing facilities. A portable demonstrating machine has been set up on a trailer, and Mr. Minton is prepared to show all those interested the methods and costs of manufacturing cradle tile and to point out its best application to present methods of building septic tank drain fields.

Rx Ready Mix

(*From page* 170)

No intermediate sizes shall be considered standard.

"Sec. 6 *Capacities*—All standard sizes of mixers shall be guaranteed by the manufacturer to mix an additional cubic yard over their rated capacity as a mixer."

This list of sizes included several which had not been authorized previously by the Bureau as standard. The need for some of the new sizes which were intermediate between previous standard sizes had resulted from the application of the different weight limits of trucks in the several states.

It will be noted that the authorized increase in loading above the rated capacity as a mixer is not identical in the Association and the Bureau standards. Under the Association standard the maximum mixer loading for a 4½-cu. yd. unit would be: 4½ cu. yd. + 10% = 4.95 cu. yd. Under the Bureau standard the maximum loading for the same body would be 4½ cu. yd. + ½ cu. yd. = 5.0 cu. yd. This small difference is not a significant inconsistency.

The A.S.T.M. Specification for Ready-mix (designation C94-54T), the revision which was adopted subsequent to the approvals of the Association and the Bureau standards as quoted above, also recognized mixer loadings above rated capacity in the following provision—

"Sec. 9 *Mixing and Delivery* (e): When concrete is mixed in a truck mixer loaded to its rated capacity, the number of revolutions of the drum or blades at mixing speed shall be not less than 50 nor more than 100. If the volume of the batch is greater than the rated capacity, but not greater than that guaranteed by the manufacturer, the number of revolutions of the drum or blades at mixing speed shall be not less than 70 nor more than 100. All revolutions after 100 shall be at agitating speed."

Thus, when operating as a mixer, an overload up to ½ cu. yd. above the rated capacity, which is in accord with the standard of the Bureau, complies with C94-54T, provided that the mixing time is increased to 70 revolutions at mixing speed, instead of the minimum of 50 revolutions required for a rated capacity load.

The full texts of the three standards discussed above are contained in Publication No. 47 of the N.R.M.C.A. entitled *Specifications and Test Methods for Ready Mixed Concrete*. The accompanying discussion in that pamphlet outlines the scope of each of the standards, points out the interlocking provisions, and emphasizes the conclusion which has been mentioned above, namely that "the three standards are not in conflict and are consistent, each with the others."

The loading of truck-mixers to ½ cu. yd. over the manufacturer's rated capacity has been approved widely by supervising agencies, both public and private. In a relatively few instances an agency has such authorization under consideration. But the generally satisfactory results throughout the ready-mix industry with the larger loading would indicate that delivery of the additional one-half cubic yard over rated capacity as given on the Bureau plate attached to the mixer— *e.g.* 4 cu. yd. in a 3½-cu. yd. unit or 5 cu. yd. in a 4½-cu. yd. unit—will meet with practically universal acceptance in the very near future.

Concrete Pipe

(*From page* 177)

persons selected by the purchaser.

Inspection of casting or making the pipe; the position and size of the steel; and curing, testing, and examination of the finished product are matters not so necessary from the standpoint of the producer and they are properly a charge against the purchaser. In any event, if the inspection is to be of value and not result in unnecessary delays and costs, it must be done co-operatively. The inspector must not have a detective complex, and the producer must understand that the examination is necessary and even desirable from his own standpoint. Prompt correcting of material and manufacturing faults and early testing and inspection will save much trouble and expense. . .

James McGowan has been named the new manager of Reddy-Mix Concrete Company, Inc., in Augusta, Kans. He was formerly associated with the Deal Lumber Co. ready-mix concrete plant at Winfield, Kans.

GREAT GOING

. . . with rugged White power engineered right to the job!

WHEN the going's rough and the payload heavy—then is the time you're thankful for a White Six-Wheeler!

In rugged ready-mix service, for example, Whites set the performance standard because of their quality—with sturdy, double channel heat-treated alloy steel frames . . . powerful Mustang Engines . . . heavy-duty axles.

Great going! Yes, because you can carry more payload, do more work, with Whites.

It's the same, no matter what your business, because Whites are engineered *right* to *your* job.

Get the whole story of White Quality from your White Representative without delay.

THE WHITE MOTOR COMPANY • ***Cleveland 1, Ohio***

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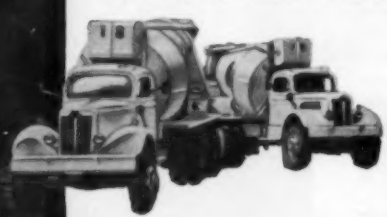


White

CONCRETE MATERIALS, INC., Charlotte, N. C., have a fleet of White WC-2264 Six-Wheelers in their service, with 5½ cu. yd. transit mixers, used as 6½ yd. agitators, for total payload of 26,000 lbs. R. O. Evans, manager, says, "Auxiliary transmission with both over and under drive is of great benefit. Gasoline mileage excellent. White frames and springs are outstanding. We are proud of our Whites!"

FOR MORE THAN 50 YEARS THE GREATEST NAME IN TRUCKS

Capturing Good Publicity For Your Business

By DAVID MARKSTEIN

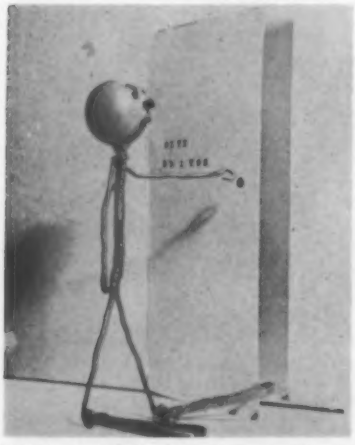
JUST how does a concrete manufacturer land his name —and that of his firm—in the news columns of local papers or on radio news broadcasts?

Publicity can be highly profitable. It can sell a name, put the plant in a favorable light, keep people informed of the existence of Ralph Roe and of the fact that he is a good guy, connected with a good company.

Here are some ways you can land in the news — proved - in - practice ideas for a publicity program.

Dramatizing People

The first group of publicity-getters involves dramatization of people who work for the company. There is a reason why many successful outfits use employee publicity effectively. By playing up Pete Hatrack, the billing clerk for Ralph Roe, Ralph puts in his own plugs and by inference sells his company as a sound one because it's where Pete Hatrack works.



It is important to become personally acquainted with the men whose decisions determine whether publicity will be given your copy. These men include city editors, radio and TV newscasters, reporters, and departmental editors. Get your foot inside the door!

Unusual Jobs—These may not be unusual to you, but to a newspaper reader, they might be sufficiently new to draw his interest and justify devoting a few paragraphs of news space, and perhaps a photograph as well, to tell the story.

Interesting personal data—It may be that some of your people (maybe you, too) served in World War II or Korea and recall incidents which throw sidelights upon current events. Ex-service men have stories to tell that people want to hear. Perhaps they have pictures tucked away, too. A call to the local editor might result in profitable publicity, even if the publicity is no more than a mention that Sam Smith, formerly a bomber pilot, now works for the Roe Concrete Company.

Interest in past histories isn't confined to those who went overseas in service. One employee may have been a bowling champion, whose views on the game are timely while a city-wide tournament is being held. Another may have been the stand-in for a movie star. Have his picture published in the paper when the great man visits Whoozisville, as the local son who "stood in". A third might have recently won a photographic exhibit prize.

Men in uniform—The demands of the armed services are insistent. Firms will be losing men. When your employee leaves, a small news item, sent in time to make it newsworthy, has excellent chance of landing in print.

Special "gimmicks"—One sales manager called in a university psychologist to give all of the firm's employees an I.Q. test. Then he issued a statement to the press on the results, with the claim that in his opinion no other outfit could boast such a concentration of pure brain-power. He included a comparison of the average I.Q. of these employees with the national average. The very novelty of this made reporters grab it for human interest.

Interest Clinchers

You yourself are a prime source of potential publicity. Here are some ideas for getting personal publicity:

Become a civic leader—The businessman who heads a solicitation committee for a charity drive, works as a leader in local civic tasks, or takes part in local betterment programs of every kind—this man doesn't have to worry about "getting" good publicity. It comes to him. And it is publicity of the very best kind, which pictures Ralph Roe as a tireless toiler in the interest of

Editors believe that the proverb about a picture being worth a thousand words has much truth. The use of good news-type photographs will help publicity efforts to succeed.

Seat beam production costs cut 50% . . .

Precast concrete seat beam being lowered into place in new Coliseum at Charlotte, N. C.

A section of the structure showing seat beams in place. When complete the coliseum will seat 10,000 people.

Architect: A. G. ODELL & ASSOCIATES, Charlotte, N. C.
Consulting Engineers: SEVERUD-ELSTAD-KRUEGER, New York City
General Contractor: THOMPSON & STREET CO., Charlotte, N. C.
Manufacturer of Precast seats: CONCRETE MATERIALS, INC., Charlotte, N. C.

with **LEHIGH EARLY STRENGTH CEMENT**

The unique design of the new coliseum and auditorium at Charlotte, N. C. called for 1000 precast concrete seat beams, each weighing 4000 pounds.

Using Lehigh Early Strength Cement and mass production methods to cast the beams, Concrete Materials, Inc. were able to strip and re-use forms within 24 hours. The beams were ready for placing in 72 hours, *less than half the time* that would have been required with regular concrete.

This fast production schedule, made possible by the use of Lehigh Early Strength Cement, cut labor, curing, form and general overhead costs by 50%.

These results are typical of the savings that manufacturers can expect when using Lehigh Early Strength Cement in casting quantities of special units.

LEHIGH EARLY STRENGTH CEMENT
LEHIGH PORTLAND CEMENT
LEHIGH AIR-ENTRAINING CEMENTS
LEHIGH MORTAR CEMENT

LEHIGH

PORTLAND CEMENT CO. *Allentown, Pa.*

community improvement, a good citizen, a good neighbor.

Be an authority in your field—One small town manufacturer of concrete products telephoned the city editor of his local paper recently, identified himself, and said: "Look, I know that now and then you report news in the construction field and that you folks can't be expected to be experts in everything. I just want to let you know that I'll be glad to help out if one of you is stymied about something I might be able to unravel. Just call me any time."

He followed through by telephoning to the editor whenever he thought there might be something interesting in the news which he could explain with background facts. Soon reporters got into the habit of calling him regularly to quote opinions. He had become an authority.

Your activities can be news—Some businessmen wonder how their colleagues get day-to-day publicity of this type: "Ralph Roe, president of the Roe Concrete Company, Inc., reports that more highways and toll pikes will be launched this year, according to information gleaned at the Tri County Concrete Products Association convention from which he returned yesterday." These notices don't land in the papers by accident. Usually, they are there because Ralph Roe presented himself at the city room upon his return.

Promotional events and day-to-day activities can also make news if they are handled with good publicity sense. Here are some examples of ways in which business men follow through from the advertising pages to the news columns:

1. Offer a dramatic service. This can be anything conceived in imagination that offers a real service and is sufficiently useful and unusual to rate news space in the press.

2. Tie in with fads. If there is a "sweep-the-country" craze, capitalize on it. A tie-in contest and promotion is almost sure to rate column space.

3. Play up company news. When your company has a new office addition or is introducing a new type of product, tell the papers about it. Making a prompt contact should result in the publication of a potentially profitable news story.

4. Feature novel ideas. There is danger in putting on unusual promotions simply in order to garner publicity. The ultimate aim is to make money, not simply to make the news. Sheer wackiness will get some publicity; but unless the idea is soundly planned for profits, it won't help put money in the till.

5. Show off your services. One firm conducts "home maintenance clinics" every fall. In addition to furnishing a very worthwhile public service, these clinics afford yearly publicity and nearly every year picture coverage, as well. However, the clinics wouldn't rate a line of copy if the sales manager had not made a point of calling the editors five days before each event. When reporters come to cover these clinics, each is handed a two-page mimeographed kit giving the history of the clinics, notable results that have come out of previous clinics, human-interest anecdotes which point up the value of the clinics, humorous sidelights, and a history of the sponsoring firm.

Play every angle; don't miss anything—Other valuable methods for securing publicity include the following workable ideas:

1. Dramatize customers. Names make news, but it's important to work *with* Mr. Prominent, securing his permission and promise of cooperation in advance; this is a much safer practice than using his name without his consent. In addition to the possible loss of a good customer, the latter policy could also lead to an invasion-of-privacy lawsuit.

2. Play up equipment news. People are always interested in new products. When new items are brought out, act quickly on publicizing them; they can help to get publicity that will result in "this-is-a-wide-awake-outfit" reactions from those who read the stories.

3. Use pictures to get publicity. Professional publicity men are well aware that a picture-and-caption item has a better chance of being published than an all-text story. The cost of one or two pictures can be well spent if you observe the rules of good news photography in order to stimulate reader interest in the picture. Here are the rules: Never allow a subject to "mug" by looking straight into the camera. Have the picture show action, not a static scene. Use employees to simulate activity of the sort that goes with the story of the picture.

4. Play up the unusual. If your firm offers anything that hasn't been sold or done before, tell the reporters about it.

5. Keep up your contacts. It is important to know the key men—not

(*Continued on page* 188)

PRASCHAK MIXERS

TWICE AS HEAVY AS THE PRICE!

CAPACITIES:

8 cu. ft. $575.00
16 cu. ft. $765.00
21 cu. ft. $860.00
30 cu. ft. $1210.00
50 cu. ft. $2300.00

(Compare the Mixer not the price)

"The Mixer That Can Take It"

MORE AND MORE PRASCHAK MIXERS ARE BEING SOLD EVERY YEAR, TO THE LARGEST AS WELL AS THE SMALLER PLANTS. THERE MUST BE A REASON WHY THE PRASCHAK MIXER IS *AMERICA'S POPULAR MIXER!*

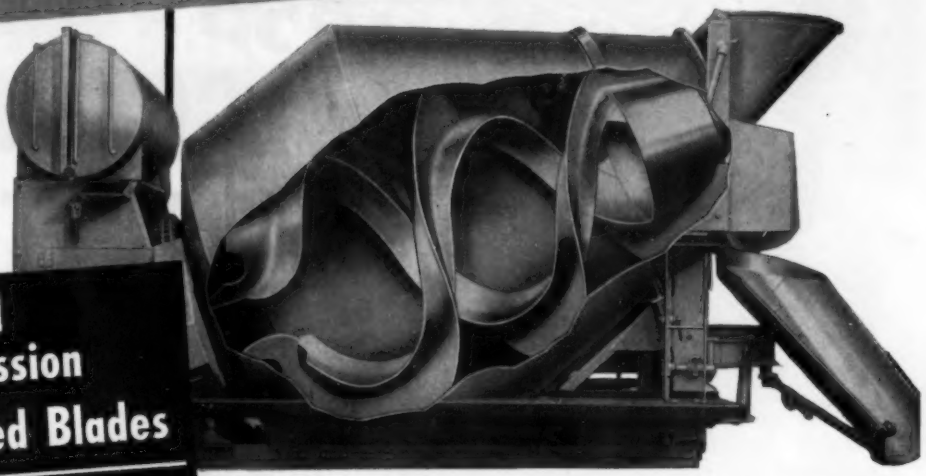
CHECK THESE FEATURES:

- ✓ NiHard Blades
- ✓ Sectional Liners
- ✓ Full Size Ball Bearings
- ✓ Extra Heavy Drive Gears
- ✓ Extra Heavy Shafts
- ✓ Drive on Either Side

AVAILABLE FROM STOCK, with Motor, Motor Mount, Drive completely assembled

PRASCHAK MACHINE CO. MARSHFIELD, WIS.

SMITH
DE LUXE TRUCK MIXERS



Cutaway view of the Smith De Luxe Truck Mixer drum. Note the patented "T"-shaped blades — the greatest improvement in mixing action ever put into a truck mixer drum.

2-Speed Transmission
+ T-Shaped Blades
= Better Mixed Concrete

Want Quality Concrete... in a Hurry?

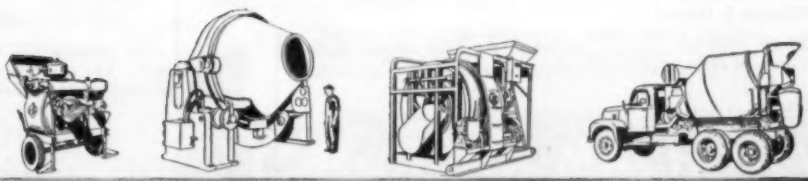
If you do, the Smith "concrete factory" with the PATENTED "T" SHAPED BLADES and 2-speed transmission, is your answer. In any inclined axis drum the heavy rock naturally rolls to the lowest point, and the fines will float. Smith has the *only* blade which counteracts this segregation. The mix is pulled to the big end of the drum, picked up, turned over, and poured into the center of the batch. True flow action takes place.

The 2-speed transmissions, standard on Smith mixers, give you the complete range of drum speeds needed regardless of the length of haul. You never need to undermix or overmix in a Smith . . . you have complete control.

The proof is in the concrete which you discharge from your Smith . . . the last shovelful out of the drum is exactly the same as the first shovelful. Call or write your nearby Smith dealer for complete details.

The T. L. SMITH CO., 2887 N. 32nd St., Milwaukee 10, Wis. U. S. A.
Affiliated with Essick Manufacturing Co., Los Angeles, California

SMITH
THE T. L. SMITH CO. MILWAUKEE U.S.A.



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IT'S BIG - IT'S FACTUAL! - IT'S COMPLETE!

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Largest in its History... incorporating all the latest available information on machinery equipment and processes

Thoroughly Re-edited—Pages of New Information

Because of the rapid growth of the industry in the past few years, and the important technological developments which have accompanied that growth, the Yearbook has been re-edited from front cover to back. Pages of new information, drawn from the experiences of the industry's outstanding producers, have been added to make this edition more than ever the indispensable text book of the concrete field.

Helps Solve Tough Production Problems

Established producers and newcomers alike will find in this bigger and better Yearbook a wealth of well-arranged, specific operating information to assist them in solving production problems and increasing profits. Plant design, the selection and characteristics of raw materials, batching, mixing, curing, handling and marketing are just a few of the important subjects treated.

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When new plants are built, when equipment requires replacement, or when existing plants require modernizing and expansion, experienced operators unfailingly turn to The Concrete Industries Yearbook for the know-how information they must have. Today, just as when it was first published 16 years ago, the Yearbook is absolutely unique in its field. And in every year since its inception the demand for copies has far exceeded supply.

Supply Limited — You Cannot Be Sure of a Copy Unless You Order Now

With every producible block, joist and cubic yard of concrete desperately needed today to ease the most severe housing shortage this nation has ever known, you will want more than ever to have on your desk this practical, down-to-earth guide to better production and higher profits.

So place your advance order now and avoid the risk of being disappointed. The supply will be limited, and distribution will be on the first come, first served basis.

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Pit and Quarry Publications, Inc.
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Please send me.....copies of the 1955 edition of the Concrete Industries Yearbook.

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City.....Zone.....State.....

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PRICED *Right* FOR PROFITABLE OPERATION...
BUILT *Right* FOR HIGH PRODUCTION

Columbia FULLY AUTOMATIC
BLOCKSPLITTER

SPLIT BLADES BOTH TOP AND BOTTOM INSURE CLEAN SPLITTING EVEN WITH IRREGULAR CONCRETE BLOCK
EXTRA-LONG TAKE-AWAY TABLE GIVES MORE TIME FOR UNLOADING.
PEDAL FOR SEMI-AUTOMATIC OPERATION FOR CUTTING IRREGULAR SHAPES.

TOP MACHINE FOR THE GROWING HIGH-PROFIT SPLIT BLOCK FIELD!

It's easy to build consumer demand for beautiful split block, and it's easy to build profits with the new Columbia Fully-Automatic Block Splitter! This machine will cut labor costs, boost production, let you really cash in on heavy demand at the peak building season! Write today for our descriptive folder and specifications on automatic and semi-automatic block splitters.

District Offices In: **Wisconsin, Ohio, South Carolina, Mississippi, Florida, New Jersey, Virginia, California, Massachusetts, Montreal, Que. and Vancouver, B. C.**

✓ CHECK THESE COLUMBIA ADVANTAGES:

- Compact, sturdy design; occupies a space 8 by 5 feet.
- Hydraulic operation. You can use your present pumping unit if desired.
- Takes blocks up to 8 inches high, 24 inches long, 16 inches wide.
- Split blades both top and bottom, separately hinged, guarantee clean splitting, even with irregular shapes.

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Other models as low as $1150

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Home Office: 107 S. GRAND, VANCOUVER, WASHINGTON

Factory Branch and Warehouse at Mukwanago, Wisconsin

READ OUR MAIL

ABOUT THE IMC INSTANT MOISTURE CONTROL INSTALLATION at FLOYD PAPPIN & SON, INC.
Great Falls, Montana

FLOYD PAPPIN & SON, INC.
CERTIFIED READY-MIXED CONCRETE

Oct. 8, 1954

Colorado Premix Concrete Co.
1021 W. Mississippi Ave.
Denver, Colorado

Dear Sir:

Since the installation of your Instant Moisture Control in our plant, we have been provided the control for obtaining concrete of uniform consistency. Engineers, architects and contractors have time and again congratulated us on producing specified slump concrete so consistently. The worry of varying slump concrete on strictly controlled jobs has been eliminated. We have been able to go through the entire summer without any rejected loads of concrete due to unspecified slump.

The Instant Moisture Control has been most dependable. It has given our batch man an unlimited amount of confidence in his work. This has shown up in his time-saving operational procedures. "Time" which is so important in the ready mixed concrete business has been saved considerably this year due to the uniformity of concrete loads.

This time saved has meant money earned by our company. We feel that the Instant Moisture Control earned this money and is therefore an integral part of our operations. We wouldn't be without it.

Yours very truly,
FLOYD PAPPIN & SON, INC.
Floyd Pappin

IMC can STOP CASH LOSSES IN YOUR OPERATION

to find out how, write

INSTANT MOISTURE CONTROL
A Division of Colorado Premix Concrete Co.
1021 W. Mississippi Denver, Colorado
IMC

Good Publicity

(*From page* 184)

only the city editors, managing editors, and station directors, but the reporters and announcers who regularly cover events in your area. Be friendly and helpful to these men. Don't ever expect them to give you publicity just because you think something is newsworthy. If the city editor promised a reporter to cover your speech to the Amalgamated Sleepwalkers Club and the reporter failed to show up, don't call the editor in the morning to berate him. Maybe a hot news event popped and the reporter had to be pulled from your assignment (which didn't rate much space or reader interest, anyway) to cover something of citywide significance.

On the "Don't" Side

There are many "don'ts" which the manufacturers who seeks publicity should observe rigidly.

Don't ever tell a reporter or photographer how to do his job. He won't appreciate it. He is paid for knowing his business.

Don't ever argue with the men whose "yea" or "nay" means success or failure for your publicity effort. These men, too, know their jobs. While something may seem to be important news to you, they may be right in burying it back on page 66. They have to feature the news that will interest a majority of readers.

Don't ever apply pressure through the advertising department. A few weaker papers may force the editor to run a story he doesn't want because you are an advertiser. Most of them won't; and in any case, you will have lost an editor friend who could have done you a lot of good.

Don't ever sit on the news. If something happens today, it won't be news tomorrow. If possible, tell the reporters about it *yesterday!*

Yellen Names J. B. Hinkle To Sales Manager's Post

Jack B. Hinkle was recently appointed sales manager for Yellen Hi-Speed block machines, according to an announcement released by J. J. Yellen.

Mr. Hinkle, who has had many years of experience in the heavy equipment and concrete block fields, has also pioneered in chemical agriculture at a large hydroponic farm in the South. In his new post he will be based at 615 S.W. 2nd Avenue, Miami, Fla.

FOR BETTER, STRONGER WALLS—USE WAL-LOK

The only horizontal mortar joint reinforcing for walls that meets National Bureau of Standards Recommendations.

- To minimize shrinkage cracks
- To withstand side pressure
- To increase wall strength
- To reduce cracks caused by foundation failures

NOW 2 GRADES AND CORNERS

EXTRA HEAVY—3/16" Side Rods, No. 9 Ga. Galvanized Cross Rods.

SuperStandard—No. 8 Ga. Side Rods, No. 10 Ga. Galvanized Cross Rods. Convenient 300 ft. Bundles (25-12 Ft. Sections).

Labor Saving Corner Sections—for both grades and all width walls. (48" x 48" returns).

4 WAL-LOK FIRSTS—IMPORTANT TO YOU

The effectiveness of any reinforcing depends not only on the strength of the wire but ALSO ON ITS BOND TO THE MORTAR.

For MAXIMUM ANCHORAGE all "WAL-LOK" is (1) DEFORMED and (2) KNURLED by a cold PEENING process without impairing tensile strength—Cross Rods Project—(3) are Deeply Welded and (4) Galvanized AT NO EXTRA COST.

UNRETOUCHED PHOTO OF A WELD SECTION.

RECOMMENDED USE

Always use Wal-Lok for full length of wall above and below all openings. For extra heavy duty loadbearing walls (Public and Commercial buildings) use Wal-Lok every course. For all other walls use Wal-Lok every 16" of wall height (for 8" units, every other course).

WAL-LOK

ADRIAN PEERLESS, INC., 1498 E. MICHIGAN ST. ADRIAN, MICH.

TRUCKSTELL ON THE JOB NEWS

THE FINEST IN *ENGINEERED FOR-THE-JOB* TRUCK EQUIPMENT

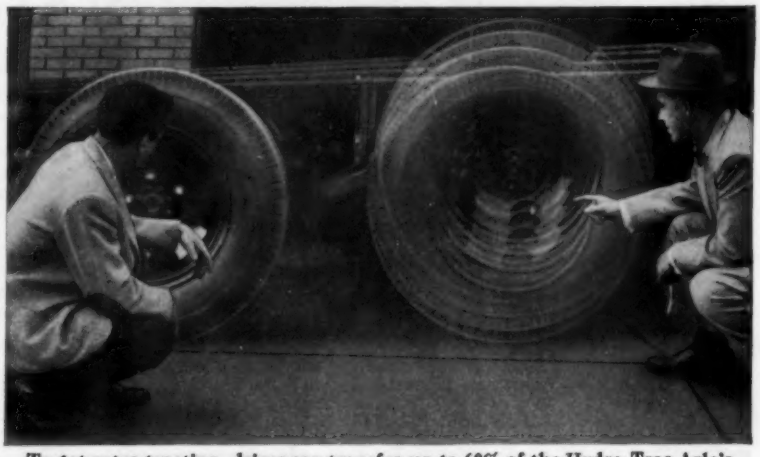
HYDRO-TRAC PROVIDES CAB-CONTROLLED TRACTION

Maximum Payload Capacity; More Work Miles per Day; Greater Tire and Gas Savings!

Operators on many types of 6-wheel hauls—dump, tank, lumber, van, semi-tractor—report that their Truckstell-Willock Hydro-Trac Trailing 3rd Axles are hitting new performance and economy highs.

Hydro-Trac supplies 50-50 axle load distribution for greatest payloads, up to 80-20 *cab-controlled* distribution for maximum traction, trailing axle up for fast, economical return trips, empty.

Weight is shifted hydraulically by quick-acting, cab-controlled pump. Less weight, less cost, more payload, more profit. Models engineered for all makes of trucks and types of drives!



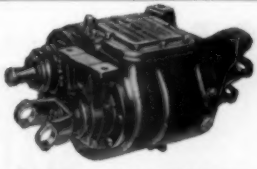
To get extra traction, driver can transfer up to 60% of the Hydro-Trac Axle's load to the driving axle . . . providing highway traction equal to a dual-axle drive, at far less cost. As stop-motion picture shows, axle can be raised off road when truck is empty, giving single-axle advantages on return trips.

New Truckstell Dual-Axle Drive Suspension Cushions the Ride and Actually Steers!

Truckstell combines Tandem-Trac Suspension with its 3-Speed Power Divider

Engineered for rugged dual-axle jobs, Truckstell keeps tandem wheels tracking on straightaways, guides them on curves. Variable rate, 2-stage springs give gentle cushioning whether truck is empty or heavy laden. Of rocking-chair bearing design, there's nothing to wear out, no need for lubrication ever!

All the auxiliary gearing needed for added gear splits is provided by the 3 gear ratios built in the Power Divider's single gearbox. Single- or dual-axle drive selection can be made instantly, at any speed. Low in cost, high in capacity, light in weight, engineered to fit your specific jobs.



3-Speed Auxiliary Now Available With Built-In Power Take-Off

Ideal for mounting under cab. Designed for those who need extra power and gear splits . . . plus full engine torque, variable speed P. T. O. easily accessible to all power-operated units! Optional gear-ratio combinations available!

Swivel Frame Increases Traction, Maneuverability, Driving Ease

Permits the front and rear halves of a truck to rotate independently. Inexpensive, strong, and light in weight. All wheels are kept firmly on ground. Frame stress and steering wheel fight are eliminated. Maneuverability and traction increased! Models available for all make trucks, ½ ton and up.

Truckstell Manufacturing Company
Dept. O-30, Union Commerce Building
Cleveland 14, Ohio

Rush me complete information on the following Truckstell products I've checked.

☐ Dual-Axle Drive ☐ Swivel Frame

☐ Hydro-Trac 3rd Axle ☐ Auxiliary and P.T.O.

Name_____

Firm_____

Address_____

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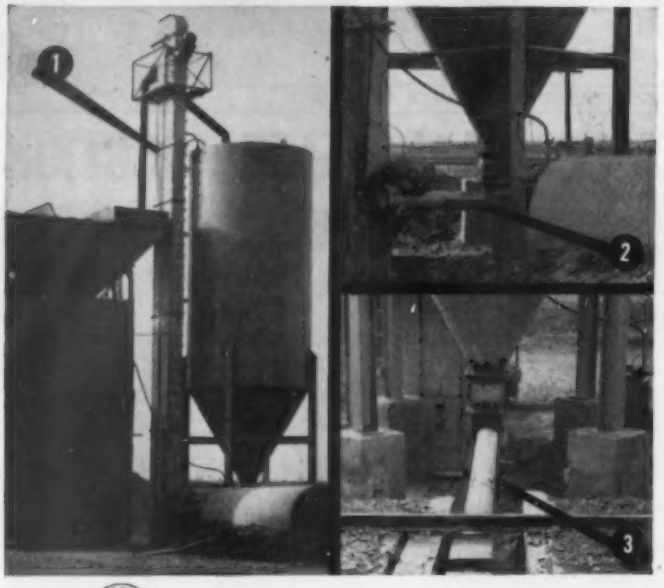
BAUGHMAN CONVEYORS and ELEVATORS



for Ready-Mix Concrete Plants

Baughman Conveyors and Elevators cost less to buy . . . less to operate and maintain . . . less to set up. That's because Baughman's "Sectionalized" job-fitted design makes the big difference. Standardized units are prefabricated to enable you to assemble, shorten, lengthen or move — without the usual high erection costs.

Shown in the installation at the left are several Baughman favorites:

1 MODEL 175 BELT AND BUCKET ELEVATOR. Fully enclosed buckets. Centrifugal discharge. Write for BULLETIN A-299. For open bucket and belt elevators, write for BULLETINS A-392 and A-389.

2 MODEL Q STATIONARY SCREW CONVEYOR. For materials that roll or become fluid in motion. Underbin and undertrack screw loaders easily attached. Write for BULLETIN A-295.

3 MODEL UT-51 UNDERTRACK CONVEYOR. Rapid discharge. Readily integrated with other Baughman equipment. Write for BULLETIN.

SALES AND SERVICE FROM COAST TO COAST

BAUGHMAN

BAUGHMAN MANUFACTURING CO., INC.

130 ARCH ST. • JERSEYVILLE, ILLINOIS

COLOR MAKES THE SPLIT BLOCK

Use Pure Strong Lightfast Synthetic Iron Oxide Colors

11 REDS—*from peach to burgundy*

5 YELLOWS—*from lemon to buff*

15 BROWNS—*from beige to chocolate*

plus

Black • Grays • Blues • Orange

and

Two Distinct Types of Green

We invite requests for further information

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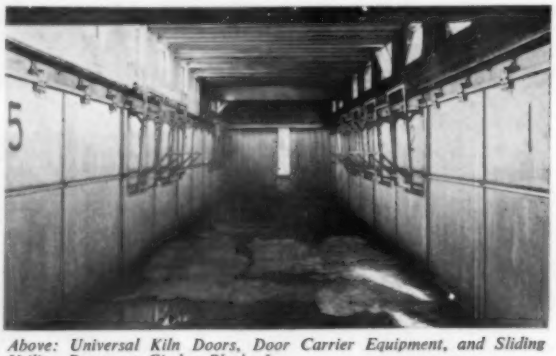
FRANK D. DAVIS COMPANY

2704 SANTA FE AVE. • LOS ANGELES 58, CALIF.

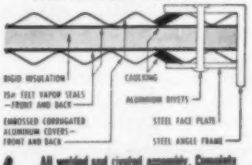
P. O. BOX 292 • NIXON, NEW JERSEY



Above: Universal Kiln Doors, Door Carrier Equipment, and Sliding Utility Doors at Cinder Block & Material Co., Indianapolis, Ind.

Kiln closure equipment is no place for tin-pan construction. Be sure the equipment *you* buy has the *guts* to give you efficient operation and long trouble-free service. Write, wire, or phone for detailed information.

PARTIAL DOOR SECTION



All welded and riveted assembly. Complete internal drainage system for condensation.

Universal

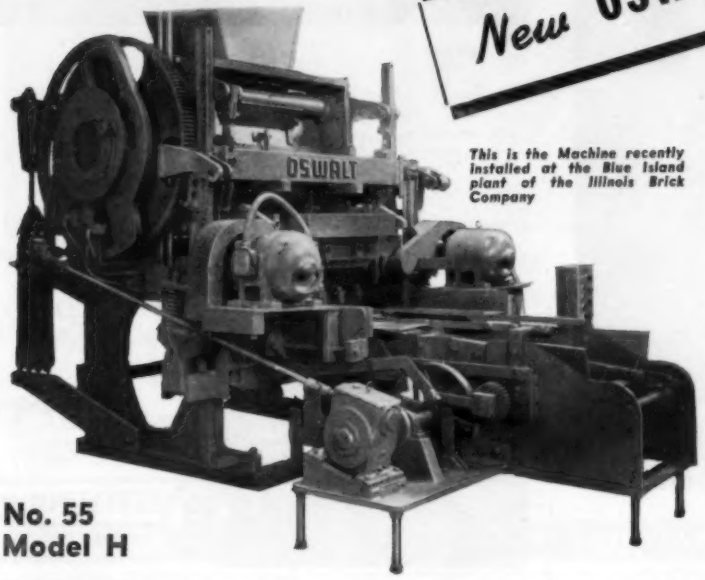
KILN DOORS and DOOR CARRIERS

NEW *Uni-Seal Door Gasket and Cement—*
NEW *Uni-Coat Rust Preventive Coating*

UNIVERSAL DOOR CARRIER, INC.
1117 Cornell Ave., Indianapolis 2, Indiana
"SPECIALISTS IN KILN CLOSURE EQUIPMENT—SINCE 1904"

NOW! INCREASE PRODUCTION WITHOUT SACRIFICE OF QUALITY

New OSWALT Block Machine



This is the Machine recently installed at the Blue Island plant of the Illinois Brick Company

No. 55
Model H

It out-ranks them all . . . because this modern design is the product of experience and engineering developments of the past 35 years.

Built for heavy-duty, high-speed and simplicity of control.

Equipped with exclusive Oswalt:

(1) Shock-Free Ejector and Front-End Pallet Feeder

(2) New Simplified Height and Density Control

(3) Improved Vibration and Production Speed-Up

Ask for new OSWALT Brochure, just published containing complete mechanical details.

OSWALT ENGINEERING SERVICE CORP.
1335 CIRCLE AVE. • FOREST PARK, ILL.
Phones: ESTEBROOK 8-4664 (Chicago)
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Cut costs 54% with job-fitted Edmont gloves

No. 31

Edmont
JOB-FITTED
GLOVES

Case No. 571: Large concrete products plant in North Carolina used laced-on leather palm pads for stacking and loading blocks and handling other products. Cost $10 per dozen. Maximum life per pair, 120 hours. Edmont No. 31 gloves with triple-thick plastic coated palms wore 260 hours on same job—at direct cost saving of 54% plus safer, non-slip grip and easier handling.

Make Free On-the-Job Test: Employers, tell us your operation. Without cost we will supply samples of correctly job-fitted glove for you to test.

Edmont Manufacturing Co.
1208 Walnut Street, Coshocton, Ohio

Build Better Masonry Walls FASTER!

TIME MEANS MONEY
Dur-O-wal handles fast on the job . . . assures neat, tight mortar joints because the slim, high tensile steel rods are butt welded in a single plane.

BACKBONE OF STEEL FOR EVERY MASONRY WALL, genuine Dur-O-wal assures a job of lasting quality at minimum cost. This time and laboratory tested reinforcing member handles easily, works fast, lays flat. Insist on Dur-O-wal for speed, economy, and convenience. You will like the tight neat mortar joints when you use Dur-O-wal to reinforce block, brick, or tile. The improved deformed side rods assure maximum bond strength. Available everywhere. Choose Dur-O-wal today.

Butt Weld
DUR-O-WAL
WITH TRUSSED *Design*

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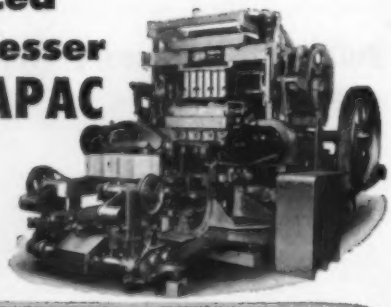
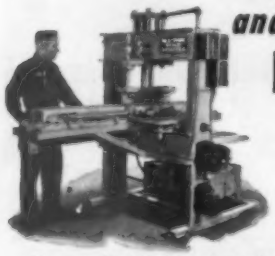
CEDAR RAPIDS, IOWA
Dur-O-wal Division, Dept. 655
Cedar Rapids Block Co.

Give Customers Beautiful Split Block Like This—

made from Block produced on a Besser VIBRAPAC



and Split on a BES-STONE Block Splitter



Yes—split block *is* beautiful if it's made *right*, using a Besser Vibrapac and Bes-Stone Splitter—the combination that gives you NEW PROFIT OPPORTUNITIES plus SATISFIED CUSTOMERS. Get all the facts from your nearby Besser Representative, or write for literature to:

BESSER COMPANY

Complete Equipment for Concrete Block Plants

ALPENA, MICHIGAN, U.S.A.

Get STEAM QUICK with "Kwik-Steam"

(IN 2 MINUTES)

for curing Blocks and Pipe with the Littleford "KWIK-STEAM" Vapor-Clarkson Generator

Modulating controls

fully automatic

steam where you want it

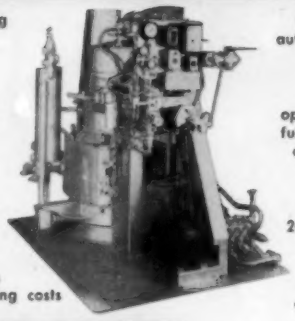
operates at full or half capacity

steam when you want it

sizes from 20 to 165 BHP

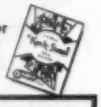
cuts manufacturing costs

speeds up curing cycle



You get steam in 2 minutes flat from a cold start with the Littleford "Kwik-Steam" Generators. And you save real money on concrete manufacturing costs, because the "Kwik-Steam" reduces labor costs 50% (no skilled labor required) and speeds up the curing cycle. There's a size for your plant. Send for descriptive bulletin.

Send for Bulletin EE-22



LITTLEFORD

LITTLEFORD BROS., INC.

453 E. Pearl St., Cincinnati 2, Ohio

Speed Up Hand Work with the BIG BULLY AIR HAMMER

- Clean Equipment
- Shape Dry Concrete
- Clean Forms

Clean Mixing Trucks Faster

Clean Fragile Mixing Equipment Safely

Vibrating Concrete From Hopper

Weight only 50 oz., 6 in. length, fits hand easily. Exclusive metering trigger delivers 0 to 9000 blows per minute. 28 tools available for 100 different jobs. Special tools made at your request.

Write for Complete Information Today

SUPERIOR PNEUMATIC & MANUFACTURING, INC.

Main Office & Factory 4758 Warner Rd. Cleveland 25, Ohio

West Coast Office 15615 Arrow Highway Azusa, California

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It's no secret why more and more fleet owners are standardizing on

TRANSCRETES®

They simply put *more* and *better* concrete in the forms . . . in *less* time . . . at *less* cost . . . for *BIGGER PROFITS!*

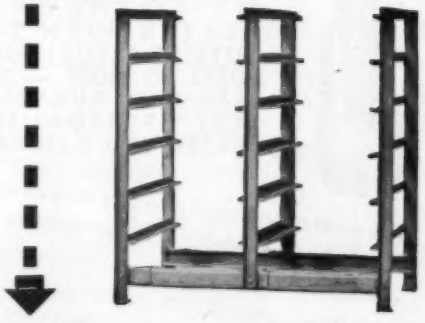
3½ to 7 Yard Capacities

Write for NEW, FREE Bulletin TM 1055

CONSTRUCTION MACHINERY COMPANY • Waterloo, Iowa

CHASE BLOCK RACKS, PLAIN STEEL PALLETS

Your best buy



Here's why • • • Standard style or specially designed, Chase racks meet your requirements. They're shipped painted and knocked down—assembly is easy—no special tools or welding needed. Chase experience means low prices and years of dependable service. Check Chase prices.

Chase FOUNDRY & MANUFACTURING CO.
3300 PARSONS AVENUE • COLUMBUS 7, OHIO

Make More Money as a Manufacturer of DUNBRIK

More local plants are needed to supply the ever-growing demand for Dunbrik — the superfine brick. Precisely dimensioned—truly symmetrical — produced in a full color range. Used throughout the world for more than a quarter century.

Dunbrik manufacturers operate in franchise-protected territories. Generous income potentials. Liberal sponsor cooperation. Dunbrik machines available on lease or sale. Write for "Blueprints for Profit".

W. E. DUNN MFG. CO.
442 West 24th Street, Holland, Mich.
CANADA: Dunn Masonry Machinery Ltd.
926 Dundas Highway, Cooksville, Ont.

There's an extra market for masonry units in

CONCRETE BLOCK JOIST FLOORS

The popularity of concrete block joist floors for buildings with light floor loads is rapidly increasing. Such floors are easy to build. They also are sturdy, durable, economical and firesafe.

One of the best ways to develop this "extra" market is to promote sound construction practices. You'll find it's good business to make frequent calls at job sites—encouraging builders to follow these simple steps:

1. Build exterior wall to the height of a floor, including one course of 4″ solid concrete block.
2. Erect formwork of parallel planks for supporting filler units and concrete slab.
3. Lay rows of block on planks, with cores running horizontally. Joints between block in adjacent rows may be staggered or continuous.
4. Install reinforcing bars for cast-in-place joists as per design table.* Place conduits for wires, ventilating, plumbing and heating.
5. Set a continuous strip of 1″ waterproof insulation board—as deep as the floor is to be—around the outside edge of the floor.
6. Place concrete for joists and slab and moist cure 5 to 7 days. The floor is an ideal base for any finish desired. The flat underside can be painted, plastered or left exposed as desired.

*Write for helpful free booklet on design and construction of concrete block joist floors. Sent only in United States and Canada.

PORTLAND CEMENT ASSOCIATION

Dept. A10-58, 33 W. Grand Ave., Chicago 10, Ill.

A national organization to improve and extend the uses of portland cement and concrete . . . through scientific research and engineering field work

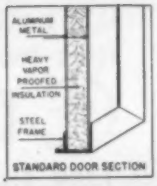
SAVE FUEL • REDUCE CURING TIME
CUT COSTS • UP PROFITS
with *Standard* KILN DOORS!

WHERE AISLE SPACE IS LIMITED STANDARD sliding doors need no aisle space. The carrier-type door (shown) requires 15″ minimum clearance above top of door opening. A vertical sliding door, counterweighted for easy opening, is also available.

WHERE HINGE-TYPE DOORS ARE PREFERRED Choose from two STANDARD hinge-type doors. The top-hinging door (shown) can be used when there's insufficient room at sides of door. The conventional side-hinging door has rugged hinges and positive-seal lock.

CHECK THESE FEATURES

- √ **Heavy Aluminum Sheets on Both Sides of Thick Vapor Proofed Insulation.**
- √ **Rugged Steel Frame.**



STANDARD DOOR SECTION

Get the Best — Send for Details Now

STANDARD DRY KILN COMPANY

P. O. BOX 5708 . . . . INDIANAPOLIS 21, IND.

ENGINEERED TO GIVE YOU MORE HEAT PER DOLLAR

HY-LO THE ONLY HEATER WITH THE OUTSIDE RETURN PIPE. COSTS NO MORE — THE CLEANEST BURNING, BEST PERFORMING HEATER YOU CAN BUY.

The most economical portable oil burning heater on the market . . . for indoors or outdoors—keeps men and equipment working—construction materials usable. HY-LO will solve your heating problem. Operates on low cost fuel oil—will provide from 70,000 to 140,000 BTU's of clean heat per hour.

Write or wire for nearest distributor **DEALER INQUIRIES INVITED**

Distributors in all principal cities

Schen PRODUCTS CO.

293 STOWELL, UPLAND, CALIFORNIA

WAREHOUSE: CHICAGO, ILLINOIS

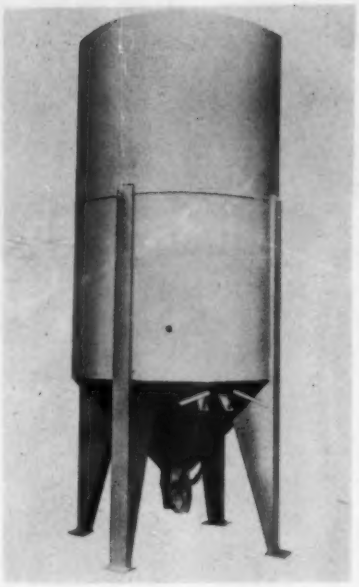
CM New Machinery and Supplies

● Standard Steel Corp. has just released a new, portable, high-speed batching plant. A 150-ton capacity unit, it is the first of a complete line of concrete construction equipment planned by the firm.

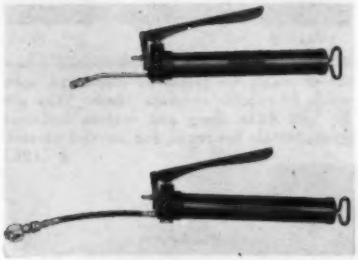
Designated the model 4A-150P, it can be knocked down into four component sections and transported on only three low-bed trucks. Less than two days are needed to erect it and less time is required for knock-down.

The plant produces 160 cu. yd. of dry mix, or 110 cu. yd. of transit mix per hour, with both cement and aggregates accurately weighed to meet all specifications. A vertical bucket elevator fills the vertical 550-bbl. cement batching and storage area. One man controls the unit which has an easily set and changed three-batch selector system.

Simple access is provided to all valves, controls, drives, bearings, and gates. Substructures under which trucks drive clear 6½-yd. mixers. Guard rails around both the platform and the elevator head sections are provided as are safety guards on the ladder to the top of the silo and a safety grill in the cement feed hopper. ← (101)



● This all-steel bulk storage unit made by the Andrews Machine Co. is available in 10- or 25-ton capacities and is fabricated as one unit on four legs, thereby eliminating any assemby on delivery. It has an effective swing control gate on the hopper bottom. ↑ (102)



● Lincoln Engineering Co. announces two new super volume lever guns equipped with a rigid hydraulic coupler extension for contacting hydraulic fittings, or with a 12-in. whip hose extension with button head coupler for contacting button head grease fittings. ↑ (103)

● "Twin-V" is the name of a new line of mobile radio equipment manufactured by Motorola. Adaptable to many applications, the new units feature major innovations improving receiver sensitivity, noise suppression, and voice frequency reproduction. ↑ (104)

SEPTEMBER, 1955

MORE INFORMATION PLEASE

THE CONCRETE MANUFACTURER
431 S. DEARBORN ST.
CHICAGO 5, ILLINOIS

Please send more information on items described in editorial columns of this issue, as circled below.

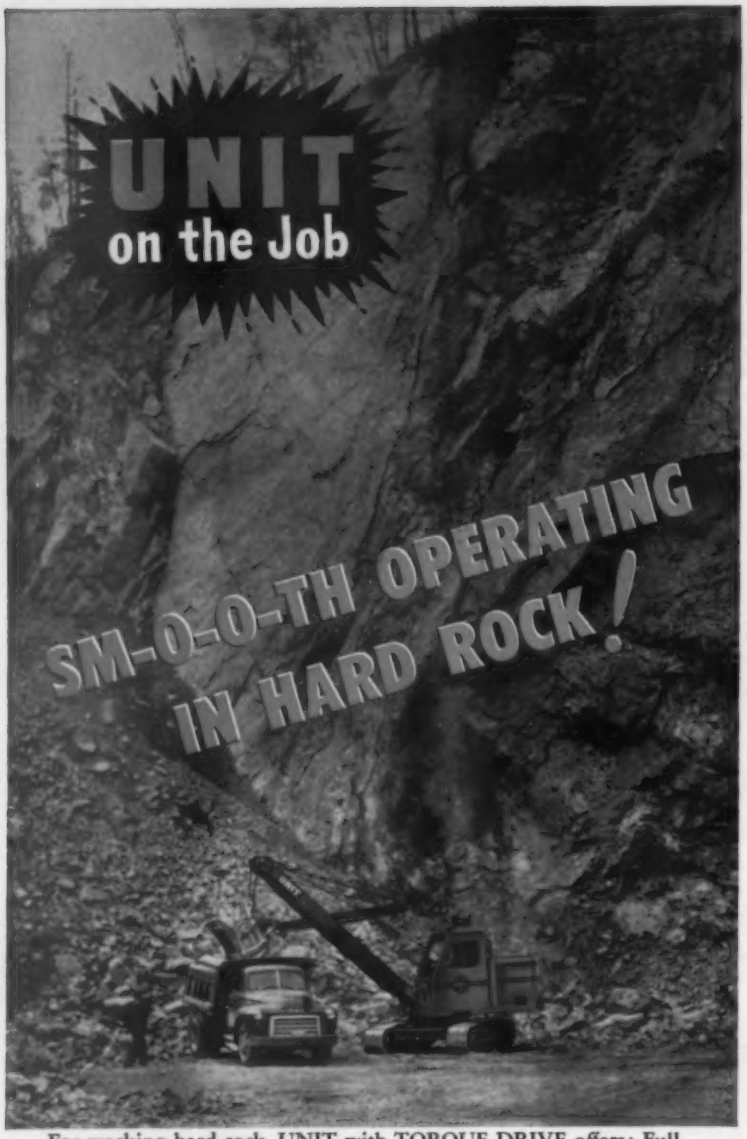
101 102 103 104 105 106 107 108 109 110
111 112 113 114 115 116 119 118 119 120
121 122 123 124

Name_____ Title_____

Company_____

Address_____

City_____ Zone_____ State_____



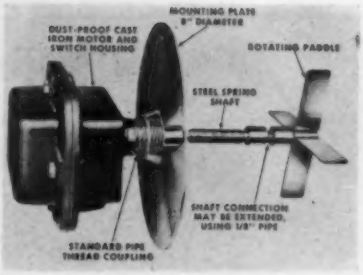
For working hard rock, UNIT with TORQUE DRIVE offers: Full, steady power without stalling engine — Increased lugging power — Elimination of shock loads on machinery. Investigate these advantages and other UNIT features. Write for Bulletin No. U-1153.

UNIT CRANE & SHOVEL CORPORATION

6329 WEST BURNHAM STREET • MILWAUKEE 14, WISCONSIN, U. S. A.

½ or ¾ YARD EXCAVATORS...CRANES UP TO 20 TONS CAPACITY
CRAWLER OR MOBILE MODELS . . . GASOLINE OR DIESEL

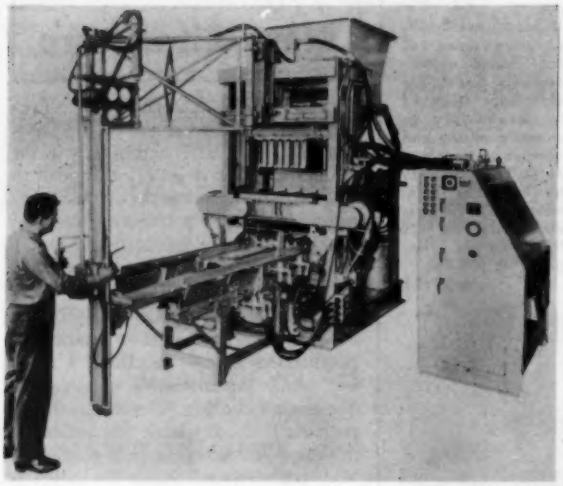
All Models Convertible to ALL Attachments!


MOUNTING PLATE 8" DIAMETER
DUST-PROOF CAST IRON MOTOR AND SWITCH HOUSING
ROTATING PADDLE
STEEL SPRING SHAFT
SHAFT CONNECTION MAY BE EXTENDED USING 1/8" PIPE
STANDARD PIPE THREAD COUPLING

● A new Roto-Bin-Dicator, a paddle-type bin level indicator, has been introduced by The Bin-Dicator Co. It is particularly adaptable to installations in bins under pressure or vacuum. Installation is simple, requiring only a hole in the bin wall to admit the paddle and attachment of a steel plate with six screws. ▲ (105)

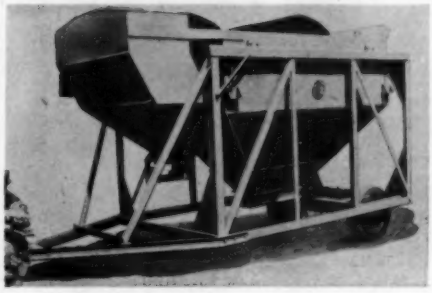
● R. L. Spillman Co. has introduced a new set of molds for improved step-tread units which fit regular concrete block. They are 36- and 48-in. long and feature bull-nose treads, ample toe room, and beveled corners. ▲ (106)

● Improvements and design changes in the model AA, miles-per-hour tachograph made by Wagner Electric Corp., include easier setting of the warning light, better legibility, and sturdier construction. It graphically records miles traveled, speed, idling of engine, and time the vehicle was in operation. ▲ (107)



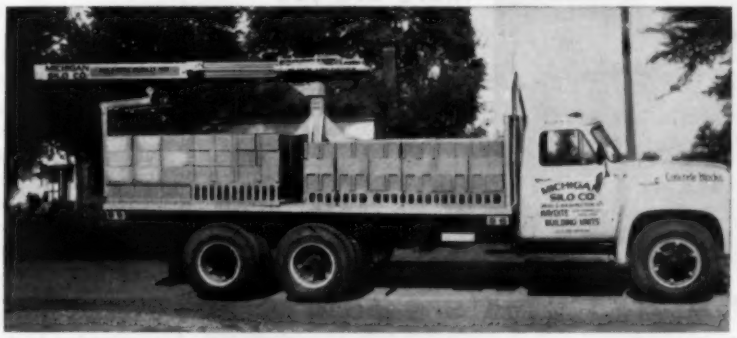
● Multipack, Incorporated, announces availability of the new fully automatic Blockmaster "3" concrete block machine. Producing up to five cycles (about 900 blocks) per minute, the machine handles all aggregates and makes all types and sizes of 4-, 6-, and 8-in. high block. Automatic controls, in a separate dust-proof cabinet, assure uniform accuracy and permit fast, safe, one-man operation. It features an air-operated, 2-stage, magnetic off bearer, dual vibration of mold boxes, new interchangeable agitator shafts, removable inserts for quick change in block type, a fully-automatic front end loader that permits easy cleaning of the hopper. ▲ (108)

● Autocar Division of The White Motor Car Co. announces the model DC-10064-SR, 149"-56" wheelbase Autocar-diesel. The spacious, comfortable cab was also made by Autocar. Weight distribution is so planned that maximum pay loads are possible without exceeding highway laws of states. The unit, which has a dual rear axle, utilizes 11.00/22 tires. The seven-yard mixer for this particular vehicle is a Rex Adjusto-Wate unit. ▲ (109)



● Smaller ready-mix operators, who have been looking for an efficient low-cost means of accurately batching to truck mixers, will welcome the new Conveyex batching bin recently introduced by Construction Machinery Sales Co. It will also admirably serve larger plant operators who need an auxiliary set-up on jobs in outlying areas. Shown with the conveyor cover removed, it can be readily loaded with a front end loader. ◀ (110)

SIDE-O-MATIC



UNLOADS ON BOTH SIDES and REAR

Introduced at Cleveland Convention—already sold in nine states. Mr. Emil F. Zuber of The Michigan Silo Company, Peoria, Illinois, whose unit is shown above, writes us as follows:—". . . I know you will be glad to hear that our customers as well as ourselves are very much pleased with this Unloader. If we were in the market for more equipment of this type it would be another Side-O-Matic."

Several More Satisfied Users:

Raymond W. Bartlett
West Creek, N. J.

City Cement Block Co.,
Bridgeport, Conn. (2 units)

Concrete Masonry Corp.,
Elyria, Ohio (2 units)

Alico Concrete Products Co.,
Patchogue, Long Island, N. Y.

Maule Industries, Inc.,
Miami, Fla.

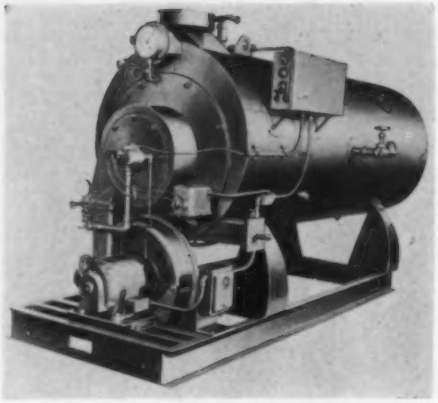
Binkley and Ober,
East Petersburg, Pa.

SIDE-O-MATIC UNLOADER CORP.

P. O. Box 1561, York, Pa. • Phone York 7357

● Mack's new B-60X, gasoline-powered, and B-61X, diesel-powered, models are especially adapted for heavy-duty as concrete mixing and dumper units. Rated at 46,000 gvw, they have a 158½-in. wheelbase. The gas engine delivers 185 hp., while the diesel produces 170 hp. ← (111)

● A secondary air damper is now being incorporated in the blower housing of all Cyclotherm steam generators from 18 to 60 hp. The damper makes it simpler to adjust the secondary air requirements than with the old arrangement of adjusting blower vanes. In addition, it gives a greater degree of accuracy in adjustment which results in higher combustion efficiency. Now all steam generators made by Cyclotherm, from 18- to 500-hp., offer this feature. → (112)



Pull a lever and there are the lintels . . . on the PreCaster

match your blocks...texture and color

● Compared to the 200 feet of lintels made by hand by one man in a 9-hour day, Radel Concrete Products, Cincinnati, believes their two-man 9-hour production of 750 feet of lintels on the *PreCaster* is worth the consideration of any forward-looking block manufacturer.

● Radel Concrete Products accents that their high standards may keep down their *PreCaster* lintel production record. It now averages 42 feet per man hour . . . about 133⅓% more than hand production. Also they testify that lintels made on the *PreCaster* match color and texture of their regular blocks. They are always the same!

● *Write today for PreCaster's new catalog detailing seven profit opportunities.*

PreCaster Inc. • 5217 Beech Street • Cincinnati 17, Ohio

New Literature

A PLASTIC ADHESIVE. Pre-Mix concrete glue, made by the *General Material Co.*, is completely water soluble and yet dries crystal clear to a permanent waterproof, acid-resistant bond. It permits permanent patches to be made on broken or cracked concrete surfaces. (113)

PALLET LIFTING MAGNET. *Stearns Magnetic, Inc.*, announces production of the "Pal-Lift," a magnet which permits easy, economical, one-man handling of concrete block pallets. It is available in Series 1: designed for simultaneous release of both pallets; and Series 2: which is designed primarily to handle individual pallet release requirements. (114)

HOPPER SCALES. This folder describes the various types of suspension hopper scales offered by *The Webb Corp.* They are of all-steel construction, featuring hardened steel pivots and self-aligning bearings. (115)

A PROTECTIVE COATING which lowers costs in safeguarding pipe, pipe joints, fittings, and couplings is covered in this bulletin from the *Tapecoat Co.* Their coating, Tapecoat-X, is a new coal tar protective agent in tape form which is made with an extra thickness of coal tar to provide double-wrap protection from single-wrap application. (116)

TWO STAGE PUMPS for boiler feed and other high-pressure applications are described in a new brochure released by *Allis-Chalmers.* Available in close-coupled and frame-type construction, they are in capacities to 300 gpm at heads of from 300 to 550 ft. at temperatures to 250 deg. F. (117)

BLOCK MACHINE delivering a maximum output without sacrificing quality has been announced by the *Oswalt Engineering Service Corp.* The machine, model H-No. 55, features a gentle shock-free delivery of the green block by starting it slowly, accelerating rapidly, and stopping gently on the smooth platform. (118)

HANDLING both pallets and bulk materials is possible with the Load Lugger made by the *Brooks Equipment & Mfg. Co.* This pamphlet gives facts on these versatile material handlers with transporting capacities ranging from 4,500 to 26,000 lb. (119)

PANORAMIC VISIBILITY is the way the *Hyster Company* describes their lift truck's new design. A single mast is used which gives the driver utmost visibility. Driver fatigue is kept at a minimum with these trucks in both 3000 and 4000 lb. capacities. **(120)**

GOOD WILL and business promotion are economically and forcefully effected by using these Time-Saver tile or cinder block projection scales made by the *Palmer Mfg. Co.* By distributing these scales with your firm's name and address imprinted on each side, you are sure of having your foot in the door at the time when buying decisions are being made. **(121)**

HANDLING AND SHOP equipment is listed in this catalog of *Industrial Handling Equipment Co., Inc.* Among the equipment listed is many types of gasoline and electric fork lift trucks, hand lift trucks, conveyors, and portable stackers. **(122)**

COLORFUL and adaptable are words used to describe the product of the Rainbow Rock machine made by *General Engines Co., Inc.* It makes four rocks at a time, and incorporates a new type mold box assembly which concentrates intense vibration in the mold box. **(123)**

MIXING TIME is saved when the Tel-A-Slump meter manufactured by the *Imperial Construction Equipment Co.* is used. It eliminates guesswork and resultant delays when the operator is not certain of the slump and has to correct by trial and error. **(124)**

New N.C.M.A. Book Describes Floor Panel Heating Systems

The National Concrete Masonry Association has published *Principles of Warm Air Floor Panel Heating*, a new booklet dealing with warm-air floor panel heating systems which use hollow masonry units. The purpose of the 20-page manual is to present the basic concept of warm-air panel heating, and to discuss the various aspects of design and installation in general terms, since the actual design of a heating system is the function of professional heating engineers and contractors.

Prepared by J. Raymond Carroll, heating and air-conditioning consultant, Urbana, Ill, for N.C.M.A., the booklet is of value to all persons handling concrete blocks. It presents yet another place in construction where concrete masonry units can be used to advantage.

More and More Manufacturers are Installing

MARVEL SYNCLINAL FILTERS

AS STANDARD EQUIPMENT

Manufacturers of hydraulically actuated equipment and others with low pressure liquid circulating systems demand their equipment to perform consistently with all the productive efficiency they build into the machine that bears their name. Since these systems must be kept free of damaging particles, the selection of a filter is an important factor. Here are some of the outstanding reasons for the increasing preference for Marvel Synclinal Filters to do this all-important job!

SUMP TYPE (cutaway)

BECAUSE . . . Marvels are designed to give maximum ACTIVE filtering area rather than total filtering area. Only ACTIVE FILTERING AREA COUNTS!

BECAUSE . . . Marvels greater storage space for filtered out particles allows longer periods of "production" time at absolute minimum in maintenance cost and "down-time."

BECAUSE . . . Marvels can be disassembled, cleaned and reassembled by any workman in a matter of minutes. Line type operates in any position and may be serviced without disturbing pipe connection.

BECAUSE . . . Marvels are protected and of sound construction to give long life and efficient filtration. THEY MEET J. I. C. STANDARDS.

BECAUSE . . . Marvels (Both Sump and Line Type) are available in individual capacities from 5 to 100 G.P.M. and choice of mesh sizes ranging from coarse 30 to very fine 200, they get a filter to fit their specific requirements.

BECAUSE . . . Marvel not only delivers a top grade filter in both quality and performance, but delivers IMMEDIATELY—shipments are made the same day orders are received, if desired.

FACTS—NOT CLAIMS

Engineers decide on the basis of the record, on the basis of measurable facts rather than claims of the "campaign promise" variety. Here is a fact with meaning—

OVER 600 O. E. M.'s

Install MARVEL Synclinal FILTERS as Standard Equipment!

LINE TYPE (cutaway)

For Dependable Protection on All Hydraulic and Low Pressure Systems Investigate

MARVEL SYNCLINAL FILTERS

FILTERS FOR FIRE-RESISTANT HYDRAULIC FLUIDS

Marvel's most recent development is a filter for the efficient filtration of all types of fire-resistant hydraulic fluids.

WATER FILTERS

Both sump and line type filters have been adapted for use in all water filtering applications. No changes have been made in the basic, balanced synclinal design.

Catalogs containing complete data available on request

MARVEL ENGINEERING COMPANY

7227 N. Hamlin Ave., Chicago 45, Ill. PHONE: JUniper 8-6023

Without obligation, please send me complete data on Marvel Synclinal Filters, as indicated

- ☐ Catalog #100—For Hydraulic Oils, Coolants and Lubricants
- ☐ Catalog #300—For WATER
- ☐ Data on filters for Fire-resistant hydraulic fluids

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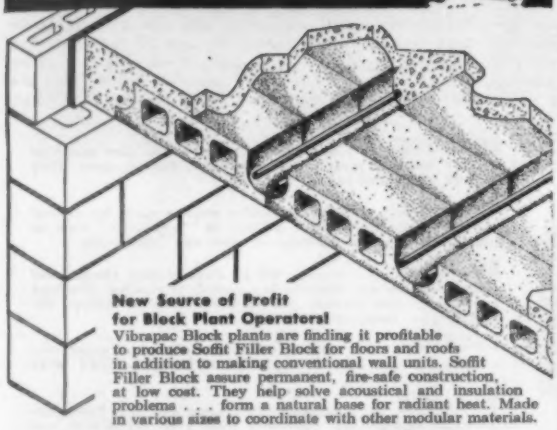
Give them BOTH-

VIBRAPAC Block for Walls
SOFFIT Block for Floors



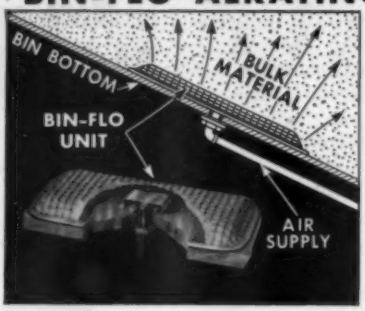
New Source of Profit for Block Plant Operators!
Vibrapac Block plants are finding it profitable to produce Soffit Filler Block for floors and roofs in addition to making conventional wall units. Soffit Filler Block assure permanent, fire-safe construction, at low cost. They help solve acoustical and insulation problems . . . form a natural base for radiant heat. Made in various sizes to coordinate with other modular materials.

VIBRAPACS are Versatile!
All types and sizes of block, as well as Soffit Floor Filler Block, are made on a Besser Vibrapac, using the same set of Plain Pallets. Fully automatic. No machine operator is required. Write for literature.

BESSER COMPANY
ALPENA, MICHIGAN, U. S. A.
Complete Equipment for Concrete Block Plants

A 8168-¼

BIN-FLO AERATING UNIT

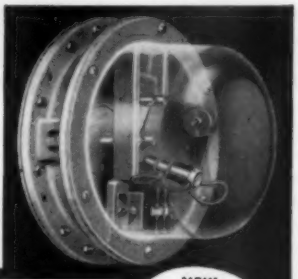


Provides Steady Flow of Dry, Finely Ground Materials which tend to bridge in storage. Uses only small amount low-pressure air.

BIN-DICATOR BIN LEVEL INDICATOR

For All Bulk Materials

signals change in level; automatically starts and stops filling and emptying equipment.



THE BIN-DICATOR CO.
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Fast pouring, stripping, setting . . . a quality product . . . our delivery rig handled by ONE MAN!

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FOR THE FINEST CONCRETE PIPE... YOU NEED FINEST FORMS!

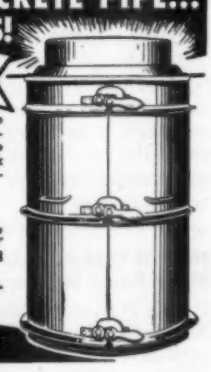
THE *Quinn Standard*

Backed by over 40 years of reliable service, the QUINN STANDARD is recognized as the finest concrete pipe form the world over. Thousands of pipe manufacturers, from the smallest to the largest, look to Quinn for equipment to produce the finest concrete pipe at the lowest possible costs.

• **QUINN HEAVY DUTY PIPE FORMS**

For making pipe by hand methods by either the wet or semi-dry process. Sizes for pipe from 10" to 120" and larger. Tongue and groove or bell end pipe in any length desired.

WRITE TODAY for complete information and estimates.



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JOHNSON ELEVATOR CHAINS

- long-life carburized steel knuckles
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All-welded BUCKETS

- light, durable, smooth
- fill fast, clean fast
- heavy gauge lips, ends
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for: C. S. JOHNSON CO. Champaign, Illinois

Send information on: ☐ buckets ☐ elevator chains

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NOW MORE THAN **150** *LICENSED MANUFACTURERS Producing*

Patented
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Concrete STEPS

A Small Investment That Pays Big Dividends

Homeward all metal forms are precision built to produce a product that requires no hand finishing.

The exclusive franchise for your territory may still be open.

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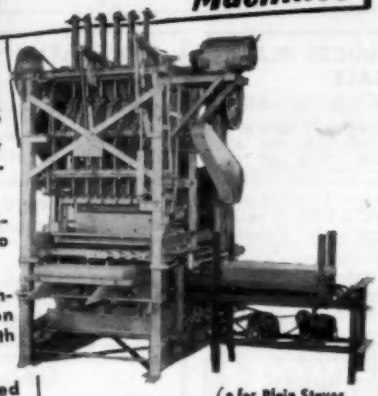
NEW
OK Automatic SILO STAVE Machines



Check these OK Features

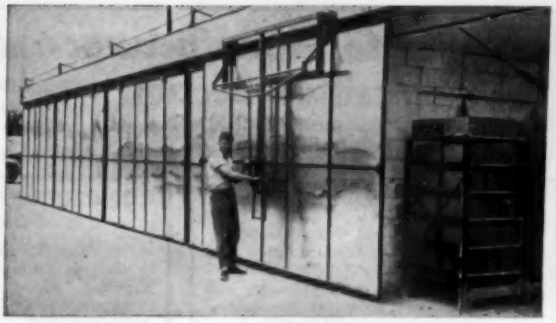
- Automatically timed and controlled.
- Uniform Tamping—the Key to Perfect Staves!
- One-Man, Push-Button Operation (when used with OK Air Hoist).
- Hand Polished Machined Molds.
- 4-5 Staves per minute, up to 1500 per 8-hr. shift.

Now ONE MACHINE { • for Plain Staves • Interlocking Staves • Corrugated Staves

This New OK Automatic Machine will multiply the money-making potential in your territory. Sell more Silo Staves—use high production OK Equipment.

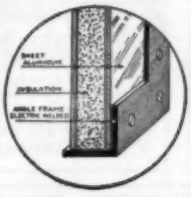
Write for Complete Details TODAY!

OK MANUFACTURING Company, Inc.
2824 22nd Ave. S. • Minneapolis 7, Minn.



Moore Carrier-type Doors at Albany (Ga.) Concrete Prod. Co.

Moore Metal-Insulated Kiln Doors Save Fuel—Reduce Curing Time



Keep heat where it belongs—inside the kiln—with Moore Aluminum-Insulated Doors. They improve curing conditions—save steam—last longer.

Send us dimensions of present door openings for quotation.

MOORE DRY KILN COMPANY
Oldest and Largest Manufacturers of Dry Kilns and Veneer Dryers
JACKSONVILLE, FLORIDA · BRAMPTON, ONT. CANADA · VANCOUVER, B.C. CANADA · NORTH PORTLAND, OREGON

For Fast Results...

ADVERTISE YOUR

USED EQUIPMENT

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"The Marketplace of the Industry"

WHEELER TESTING VIBRATOR

Grades any granular material from 2" in size to 200 mesh.
Designed for sieves from 6" to 16" Dia.

Efficient, self-contained, economical, portable and quiet.

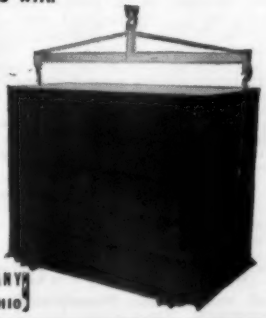
These machines have been specified for the Kansas Turnpike.

For full details write:

WHEELER CO., INC. 2408 Harrison St., Topeka, Kansas
(Distributor Territories Open)

FOR GREATER PROFITS — BUILD APPROVED CONCRETE SEPTIC TANKS with

NORWALK EQUIPMENT



Build rectangular concrete septic tanks that will meet the most rigid specifications of local health officers and sanitary engineers. Build them QUICKER and at LOWER COST with NORWALK septic tank molds.

Write for details

THE NORWALK VAULT COMPANY
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Concrete Manufacturer Classified Section

431 S. DEARBORN ST., CHICAGO 5, ILL.

Advertising Rate Per Issue: $11.00 a Column Inch. Lower Rates on a Contract Basis — Write for Rate Card.

ASSISTANT CHIEF CHEMIST

Wanted by multi-plant Cement Company for home office in the East for supervisory duties, research and development. Applicant must have degree in chemistry and experience as a supervisor of plant laboratory, or cement research laboratory. Some travel necessary. Good future. Give full details of education, background and experience. Replies will be kept confidential.

BOX NO. CM-507, c/o PIT AND QUARRY PUBLICATIONS
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CONCRETE PRODUCTS PLANT FOR SALE

In growing industrial city, surrounded by thriving farming area — Southeastern Michigan. Modern plant that cost approximately $150,000.00. Will sell for about one half above amount. To responsible party only about $8,000.00 plus nominal working capital needed to swing transaction. Balance ten years. Personal reasons compel sale.

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Ready-mixed concrete company operating six plants in Northern California needs man with experience in similar operations. Good salary, excellent future with a growing concern in a pleasant living area. Send complete information. Inquiries confidential.

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PARTNER WANTED

$25,000 will buy partnership in block plant doing good business in rapidly growing city. Future prospects excellent and with possible government contracts.

Box No. CM-1017, c/o THE CONCRETE MANUFACTURER
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PRESTRESSED CONCRETE FRANCHISE

Lakeland Engineering Associates' proven designs for floor slabs, roof decks, joists, beams, bleachers, and bridge decks, available for manufacturing under L E A P exclusive franchise. Write for details.

LAKELAND ENGINEERING ASSOCIATES, INC.
LAKELAND, FLORIDA

WANTED

Engineer thoroughly experienced in Ready-Mix Concrete Plant design, by expanding mid-western manufacturer. Present organization knows of this ad.

Box CM-909, c/o PIT AND QUARRY PUBLICATIONS
431 S. Dearborn St. Chicago 5, Ill.

WITTEMANN MACHINERY COMPANY

FARMINGDALE, NEW JERSEY

Specialists in Concrete Products Equipment

Eastern Representatives of the
COLUMBIA MACHINE WORKS, Vancouver, Washington

Plant Layout Design Block Machinery

Elevators Bins Conveyors Feeders

PORTABLE ROCK PLANT USED 37 HOURS

1955 Universal two stage
10 x 16 jaw crusher
18 x 16 roll crusher
2′ x 8′ 2½ deck screen

Mr. Rodeffer
360 West Washington St.
Pasadena 3, California
SYcamore 8-1147

FOR SALE CHEAP

Closing out concrete block plant. One ½ yd. stationary dragline on 4 steel wheels, bucket and 200 ft. of cable in good working shape. Two hydraulic lift trucks. One Papke tamper. One Leonard vibrating machine with motor. Electric motors and conveyor real cheap.

E. L. VANN

HAYWARD CONCRETE WORKS
Hayward, Wis.

WANTED

FULL AUTOMATIC CONCRETE BATCHING AND MIXING PLANT To Produce Upwards of 350 Cubic Yards Per Day. Give Full Description In Detail, Also Make, Model, Age, How Much Plant Has Been Used, Shipping Weight, Location For Inspection, Price F.O.B. Cars.

Box CM-1018 c/o THE CONCRETE MANUFACTURER
431 S. Dearborn St. Chicago 5, Ill.

PLAIN STEEL PALLETS

Guaranteed Quality
Flat • Square • Accurate
GARY STEEL SUPPLY COMPANY
2300 S. Springfield Ave.
CRawford 7-2525 Chicago 23, Ill.

FOR SALE

Appley-Yellen Semi-Automatic block machine
Skip
Mixer
Motors and Compressor
Pallet Oiler
Hydraulic lift truck
73 Steel racks
3600 pallets—4" - 8" - 12"

Equipment has only made approximately 500,000 blocks and is presently in operation and in excellent condition.

Box CM-1016, c/o THE CONCRETE MANUFACTURER
431 S. Dearborn St. Chicago 5, Ill.

FOR SALE

1 complete block plant consisting of Besser Victory Vi-Bra-Pac and attachments to make 4-6-8-10-12 inch blocks; 2,500 plain pallets ¼ x 13 x 16½ inches; 30 ft. Besser mixer like new; 30 ft. skip loader; steel bin capacity 42 ton two compartments; 50 racks easily adjusted for 48-60-72 blocks; 1 air compressor; 1 towmotor lift truck—8,000 pound capacity.

Also equipment to make 4 x 8 lintels up to 9'4" long including one 12 ft. Besser mixer used two months; 2 air hammers and plank pallets.

Priced at $12,000 for quick sale.

Write to

COLUMBIA CEMENT PRODUCTS CO.
Columbia, Pennsylvania

CEMENT COLORS

All shades and grades the highest quality. Write for color cards, prices and samples

RICKETSON MINERAL COLOR WKS.
MILWAUKEE 2, WISCONSIN
Established 1885

ATTENTION!

CONCRETE MANUFACTURERS • READY-MIX PRODUCERS

HAVING A CEMENT STORAGE PROBLEM?

I have cement silos with cap from 300 bbl. to 1000 bbl. all welded seamless construction (divided compartments if desired) legs, hatchway, vent, elevator connection, inside and out ladders, painted, shipped in one piece, no erection problem.

"PRICED TO SELL"

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GEORGE W. HOFFMANN CO.
P. O. BOX 452
SIOUX CITY, IOWA, U.S.A.
Concrete Pipe Forms & Vibrators

FOR SALE

Fork and platform power lift trucks, used and guaranteed factory rebuilts.
ERICKSON POWER LIFT TRUCKS, INC.
Saint Anthony Blvd. & University Ave. N.E.
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2—Challenge Truck Mixers mounted on RF 192 International Trucks, 175 inch Wheelbase.
Excellent Condition and priced to sell.
HYDRAULIC CONCRETE PRODUCTS, INC.
Eighth St. and Eleventh Ave. Council Bluffs, Iowa

FOR SALE — COMPLETE EQUIPMENT FOR SMALL CONCRETE BLOCK PLANT
Syntro-pac, two block machine
12 cubic ft. Batch Mixer
16 ft. Belt Conveyor
5 H.P. Air Compressor
29 Steel Racks
2000 Aluminum Pallets 8x8x16
Hand Lift Truck
Price $3000.00
FULMORE CONCRETE BLOCK CO.
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WANTED

Packerhead concrete Pipe machine to make through 18", 4' long both B & S and T & G ASTM C-14 and C-76.
Box CM-1020, c/o THE CONCRETE MANUFACTURER
431 S. Dearborn St. Chicago 5, Ill.

FOR SALE

Fully powered Clipper block machine. Molds for 4" - 8" - & 12" modular sizes. Pressed steel pallets, 18' mixer & skip, accumulator, power offbearer, racks, lift trucks, motors, switches & parts.
HOWARD G. DOERR
402 Clay Ave. Tyrone, Pa.

FOR SALE

Van-U-Matic, plain pallet, two block machine with air operated off-bearer, 15 H.P. air compressor, 1,050—3/16 x 18 x 18 steel pallets, 4 x 8 x 16, 6 x 8 x 16, 8 x 8 x 16, 12 x 8 x 16 attachments with parts for corners, sash & halves, 18 cu. ft. mixer and 25' belt conveyor. In very good condition.
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P. O. Box 273 Front Royal, Va.

FOR SALE—LIKE NEW

TWO—28 Cu. Ft. YELLEN Hi-SPEED MIXERS. FABRICATED STEEL HARD FACED SPIRAL BLADES. SECTIONAL RENEWABLE LINERS. ROLLER CHAIN DRIVE. WITH 15 H.P. 3 PH. U.S. GEAR HEAD MOTOR. WEIGHT 4800#. $2,275.00.
YELLEN BLOCK MACHINES
615 S.W. 2nd AVE. MIAMI, FLA.

For Sale—Surplus Equipment
One Lith-I-Bar, two-at-a-time block machine with molds, offbearing hoist, pallets and racks. All in good condition, used less than 6 months. Write phone or wire.
CINDERCRETE PRODUCTS, LTD.
Regina, Saskatchewan, Canada

STOP *that* WATER

With FORMULA No. 640
A clear liquid which penetrates 1" or more into concrete, brick stucco, etc., seals—holds 1250 lbs. per sq. ft. hydrostatic pressure. Cuts costs: Applies quickly — no mixing — no cleanup — no furring — no membranes. Write for technical data—free sample.
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COLORS *For Cement and Concrete*

COLOR YOUR CONCRETE WITH LANSCO CEMENT COLORS, available in 40 ATTRACTIVE shades. Suitable for all types of concrete products. Write for our new color card, copy of "Suggestions For Using Cement Colors", and for free samples and price list.
Manufactured by:
LANDERS-SEGAL COLOR CO.
71 Delavan St. • Brooklyn 31, N. Y.

PLAIN PALLET CLEANING

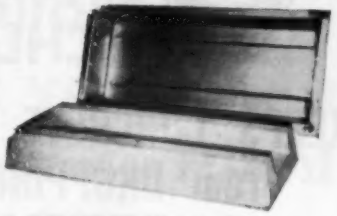
We truck our machine to your plant and supervise entire cleaning and shearing off of pallet residue. No need to shut down as we will keep up with production.
J. FRED MALANE
10265 Berkshire Rd. Detroit 24, Mich.
Phone: Venice 9-4131

MINERAL COLORS
for
BRICK MORTAR STUCCO-PLASTER-CONCRETE

"Fine Because of Their Fineness"
Ask for samples and recommendations.
BLUE RIDGE TALC CO., INC.
HENRY, VIRGINIA

MANY YEARS of PROVEN PERFORMANCE!
NOW-Anyone can repair Concrete easily!
PACKAGING AND DISTRIBUTING FRANCHISES
Welds CRACKS
Bonds NEW CONCRETE to OLD
Stops WATER
Saves TIME - Saves LABOR
Saves CEMENT
A SMALL INVESTMENT brings BIG RETURNS
WRITE TO CONCRETE WELD CO. FLINT MICHIGAN

MOLDS FOR CAST CONCRETE



METAL MOLDS FOR:
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- STEPPING STONES
- "IDEAL" STEP-TREADS
- CHIMNEY CAPS • LINTELS
- VIBRATING TABLES

For Details Write To: **R. L. SPILLMAN CO.**
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FOR SALE

Besser Super Vibrapac. Excellent condition. 30" Gardner Double Spindle Grinder. Block racks 72—8" block per rack.
BOX NO. CM-405, c/o THE CONCRETE MANUFACTURER
431 S. Dearborn St. Chicago 5, Ill.

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Several 6' diam. turn tables, good as new. Unused link-belt chain, No. 488, with K2 attachments and buckets, somewhat rusted. Steel pallets, 1/4"x25"x18½" @ $1.25 each.
CINDER BLOCK & MATERIAL CO.
2200 Montcalm St., Indianapolis, Ind.

FOR SALE

5,000 Plane Steel Pallets—5/16" x 18½" x 26" at $1.25 each. F. O. B. Dearborn, Michigan.
John A. Mercier Brick Company
3895 Roulo Ave. Dearborn, Mich.

FOR SALE

Block Plant Machinery. Complete or any part of plant. If interested contact
CARL HOOVER or WAYNE HODGES
10 Franklin Ave. • Shelby, Ohio

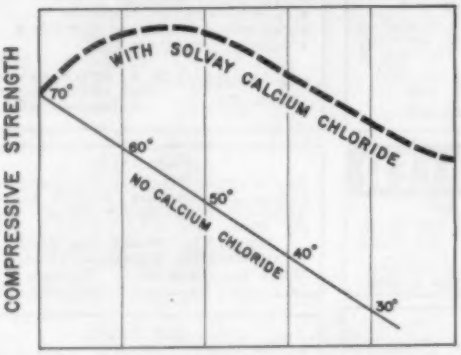
USED BLOCK MACHINES

Stearns Zipper—Jefferson, Wisconsin.
Kent Blockmaker—Saginaw, Michigan.
Two-block Van-U-Matic molds, offbearer and steel plain pallets. $1500.00—Aberdeen, S. D.
Two-block Praschak with 4" — 8" — 10" — 12" molds and pallets. $1200.00.
Stearns Clipper — Conoquenessing, Pennsylvania.
Three-block plain pallet Flam machine, reasonable—Chatham, Ont., Canada.
Besser K-12 with mixer, 3000 steel plain pallets and steel racks. $2500.00 complete—Cannon Falls, Minnesota.
Two-block plain pallet Multico complete with molds, offbearer, pallets and racks, $500.00 down—Mankato, Minnesota.
Jeltcrete No. 9 still operating—Rockford, Ill., Durham, Ont., Canada.
Jeltcrete No. 7—Quincy, Ill., Two Harbors, Minn.
Hydro-Korpac—La Porte, Indiana.
Flemings—Lith-I-Blocks—Columbias.
I also have on hand quite a supply of cored pallets, modular and full size, a few used mixers, boilers, conveyors and bucket elevators. Also I list a few plants that want partners with a little cash and lots of experience.
Mid-Western Concrete Equipment Co.
BOX 646 MUKWONAGO, WISCONSIN

SOLVAY

CALCIUM CHLORIDE

KEEPS CONCRETE STRENGTH from DROPPING with the TEMPERATURE



The Addition of SOLVAY CALCIUM CHLORIDE

to Concrete During Cold Weather . . .

• Speeds finishing • Cuts delays between operations • Permits faster removal of forms • Provides greater safety • Assures full strength

NEW 25 LB. BAGS FOR READY-MIX CONCRETE

Easy-to-Handle
•
Assures Accurate Measurement
•
Saves Time

FOR FULL INFORMATION MAIL COUPON

Allied Chemical

SOLVAY PROCESS DIVISION
Allied Chemical & Dye Corporation
61 Broadway, New York 6, N. Y.

Gentlemen:
Please send me—WITHOUT COST OR OBLIGATION:

☐ "When the temperature drops BELOW 50°F., do you know what happens to CONCRETE?"

☐ "The Effects of Calcium Chloride on Portland Cement"

Name_____

Company_____

Address_____ Position_____

City_____ Zone____ State_____ CM-10

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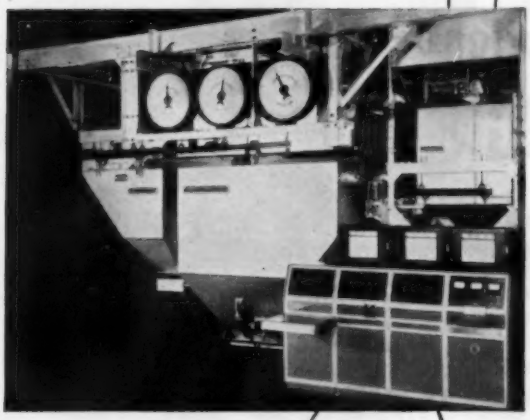
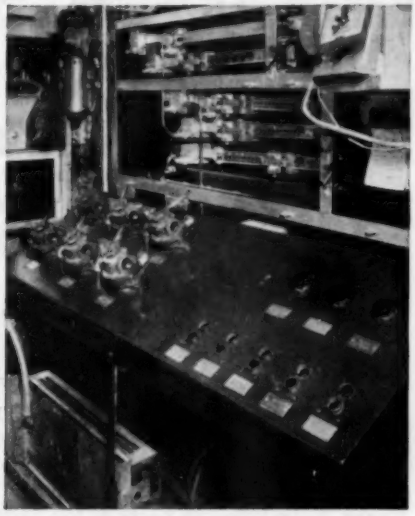
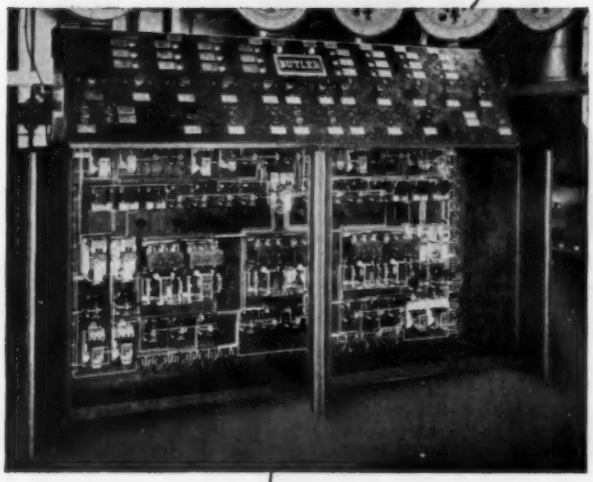
Butler Automation

. . . Tailored to fit your Concrete Plant







Whether you are operating a ready mixed plant or are manufacturing concrete products, BUTLER offers you several approaches to more profitable automatic operation.

The extent of practical automation depends upon a number of factors, and your Butler engineer will gladly analyze these matters and recommend the level of plant automation which will bring you maximum profit at minimum investment.

Butler electric and electronic controls provide ranges of automation all the way up to "punched card" remote control batching.

And best of all, BUTLER automatic batching can be installed in any plant regardless of its make.

To modernize your plant for better profits and lower costs, take the first step now. Write for a consultation with the BUTLER engineer.

BUTLER BIN CO.
987 BLACKSTONE AVE.
WAUKESHA, WISCONSIN

BAKER "FG"
— a new concept in gas truck construction —
"BALANCED DESIGN"

Here's how the Baker FG gas fork truck—"first in its class"—was conceived:

First: Exact requirements for a specific truck in the FG line were thoroughly analyzed. Then our engineers, working with a top manufacturer of heavy-duty industrial gas engines, chose the power plant specifically to meet these requirements. Even internal parts of the engine were balanced. For example, our specifications call for pistons balanced to ± 2 grams instead of the conventional ± 2 ounces.

Next: Transmission was selected to match the power plant and geared to provide required speeds and acceleration. In conjunction with the largest builder of axles in the country, the drive axle was developed to match power plant and transmission.

Lifting mechanism was selected to meet requirements and to be coordinated with power train and other components. *Mast* was engineered for the maximum safe lift, within the stability ratio of the frame which was designed for exceptionally low center of gravity. The standard Baker wide-angle steer, rubber mounted, trailing axle was modified to match the other elements.

Result: 100% Balanced Design
—another Baker "First".

Baker "FG" gas fork trucks are available with 3,000, 4,000, 5,000 and 6,000 pound capacities. Specific bulletins can be obtained by writing The Baker-Raulang Company, 1215 West 80th Street, Cleveland 2, Ohio.

Baker
HANDLING EQUIPMENT

8 REASONS WHY THE BAKER FG FORK TRUCK IS FIRST IN ITS CLASS...

1. LOWER INITIAL COST
FG-40 (4000 lb.) $3915. Other models at proportionate savings.

2. LONGER WARRANTY PERIOD
Baker quality permits full 6 months' warranty.

3. HIGHER LIFT
Mast design allows higher standard lift than ordinary trucks.

4. LOWER MAINTENANCE COSTS
Designed for easier and less frequent servicing.

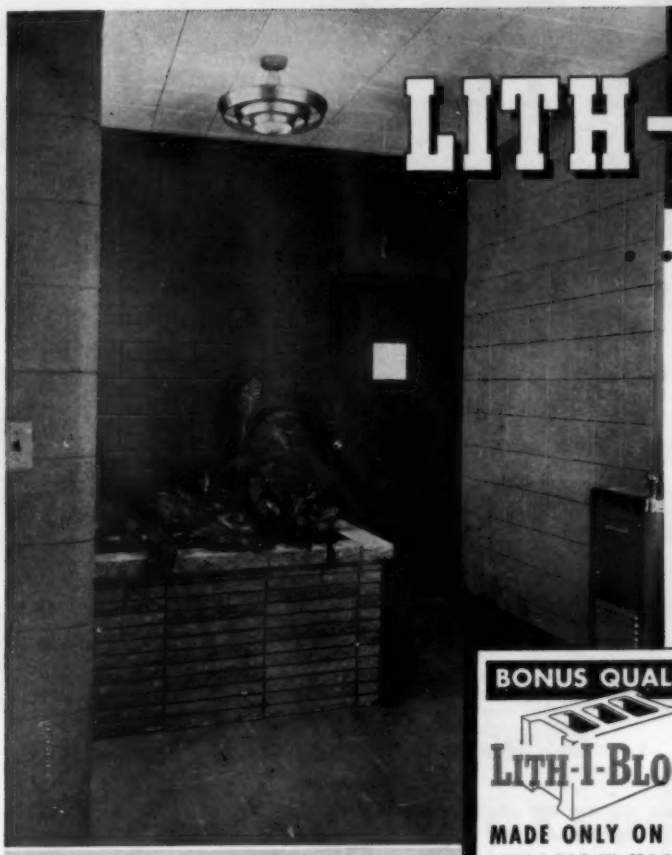
5. MORE MANEUVERABLE
Short turning radius cuts aisle width, adds floor space.

6. EASIER TO OPERATE
Greater visibility . . . easy-to-work controls.

7. GREATER STABILITY
Lower center of gravity . . . higher "stability factor" ratio.

8. BETTER BRAKING
Full floating, self-equalizing, self-energizing brakes.

5G1



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. . . EVER MORE POPULAR

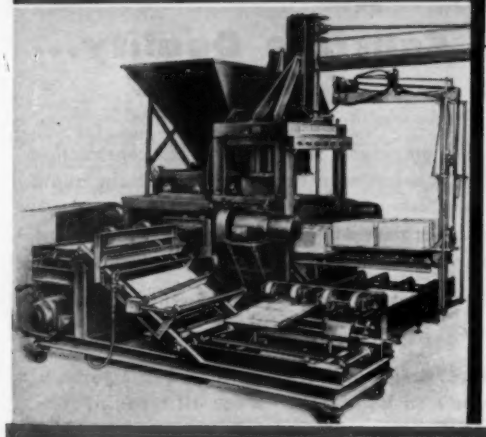
The impressive beauty and permanence of Concrete Masonry Units have helped to make them an outstanding building material. By providing an endless variety of interesting wall patterns modern Concrete Masonry Units offer practically unlimited latitude, giving full freedom to the creative skills of the architect.

The distinctive reputation gained by LITH-I-BLOCK Masonry Units in the building trades for uniformity of dimension, controlled density and even texture produces outstanding results in modern exposed masonry construction. LITH-I-BLOCK's reputation for top-quality makes it the preferred block for all types of construction.

BONUS QUALITY

LITH-I-BLOCK

MADE ONLY ON THE LITH-I-BLOCK MACHINE



MODERN FEATURES OF THE LITH-I-BLOCK MACHINE MEET EVERY PRODUCTION REQUIREMENT . . .

- **BIG VOLUME, LOW-COST PRODUCTION of top quality block.**
- **FULLY AUTOMATIC PRODUCTION with one-man operation.**
- **CENTRALIZED CONTROL CABINET for maximum efficiency.**
- **POSITIVE 4-POINT HEIGHT CONTROL — at no extra cost.**
- **OPEN FRAME CONSTRUCTION for simplified maintenance.**

GET THE DETAILS — LEARN HOW LITH-I-BLOCK CAN HELP YOU

LITH-I-BAR CO.

HOLLAND, MICHIGAN

SALES AND SERVICE THE WORLD OVER

LITH-I-BAR CO. **HOLLAND, MICH.**

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Company_____

Address_____

City & State_____

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Pozzolith Ready-Mixed Concrete supplied by Arrow Rock Co.,
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Architect Employs POZZOLITH...
To Improve Control of Concrete Quality...

POZZOLITH... the key to-

- lowest possible unit water content*
- close control of entrained air... placing consistency... rate of hardening
- reduced costs

* For a given set of materials and water-cement ratio, unit water content (water required per cubic yard of concrete) is the most important basic factor affecting the quality of concrete. A.C.I., Committee 613, 1944 Report, Page 655. Bureau of Reclamation Concrete Manual, 5th edition, Page 130.

Pozzolith has been employed, since 1932, in the construction of many architectural concrete buildings to help avoid honeycombing and other segregation defects. A better surface is obtained because of improved cohesiveness and plasticity...even when water is substantially reduced.

Architects and engineers employ Pozzolith with confidence because:

1. *proved performance*...100 million cubic yards of concrete produced with Pozzolith for all types of jobs.
2. *applied know-how*...over 70 skilled Master Builders' field technical men for product-use consultation.
3. *available everywhere*...1000 ready-mix and job-site plants now producing concrete with Pozzolith.

Ask us to demonstrate the advantages of Pozzolith for your project.

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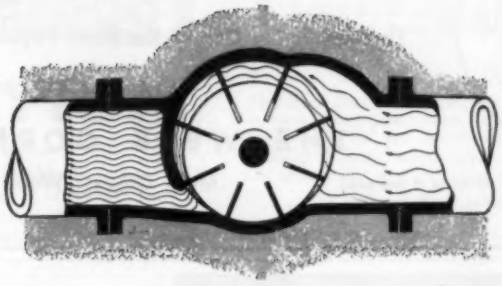
Growing Plants need PLENTY of AIR!



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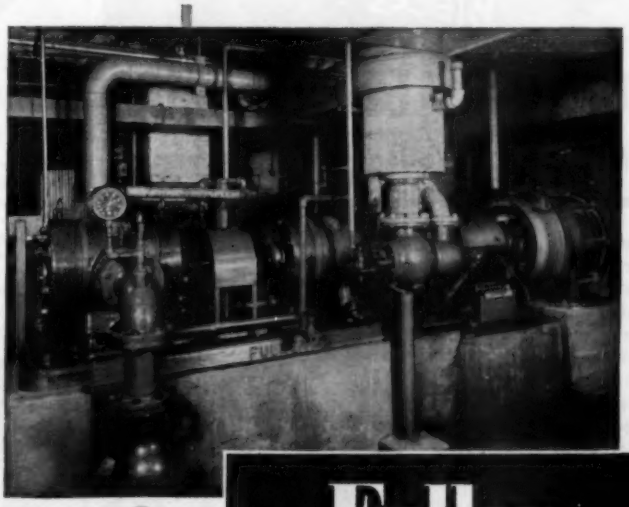

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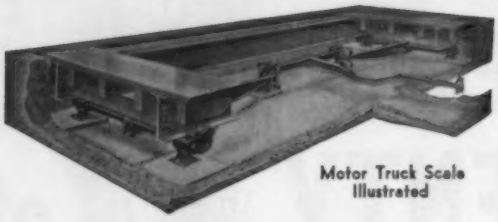

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for Maintenance ENGINEERS

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DO YOU KNOW THE MAXIMUM SAFE OPERATING TEMPERATURE FOR A V-BELT DRIVE?

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DURKEE-ATWOOD CO.
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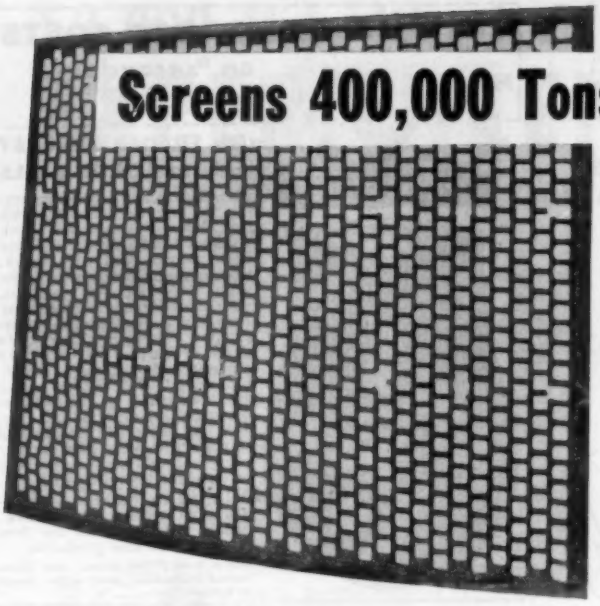
DURKEE ATWOOD V-BELTS



Screens 400,000 Tons of Petersburg Granite without a Mishap!

Here's another success story that typifies Hendrick's ability to manufacture Perforated Metal Screens that take the beatings of constant heavy-duty usage yet afford long service life:

PROBLEM: One of the Virginia quarries of Sunnyside Granite Co. had trouble screening hard "Petersburg Granite." The granite was so abrasive ordinary screens wore out quickly and had to be replaced.

SOLUTION: Hendrick manufactured a screen of ½" thick steel perforated with 1½" square holes. The screen was then heat-treated and double corrugated.

RESULT: Over 400,000 tons of Petersburg Granite passed over this one screen before it had to be replaced.

Hendrick
MANUFACTURING COMPANY
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Hendrick Perforated Plate used on vibrating and shaking screens can often mean the difference between profit and loss. To see how you can best benefit from Hendrick's long experience in manufacturing screens for the quarry industry, call your nearby representative today.

Perforated Metal • Perforated Metal Screens • Wedge-Slot Screens • Architectural Grilles • Mitco Open Steel Flooring • Shur-Site Treads • Armorgrids

NOW
OVERHEAD PLUS FRONT END LOADING COSTS NO MORE WITH LODOVER!

This versatile combination overhead and front-end loader costs no more than conventional front-end loaders . . . yet loads more dirt, faster with your International T-9 or TD-9 than any other loader on the market today!

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50% MORE YARDAGE—no-turn overhead operation eliminates two turns every cycle, doubles yardage every hour

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REDUCED TRACTOR MAINTENANCE • SAFE, EASY HYDRAULIC OPERATION • HIGH-SPEED FRONT-END LOADING

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20TH & ERIE AVENUE • PHILADELPHIA, PA.

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Here is the type of production unit that provides Aggregates to specification size and also Agricultural Limestone for farm use.

Combination unit consists of 24 x 36 Jaw Crusher with Apron Feeder, 4 x C Hammermill, 4' x 12' Tripple-Deck Vibrating Screen, Conveyor and Bins.

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The vast experience behind Gruendler Equipment assures you of what it takes to meet high production, fewer shut-downs and minimum upkeep. "SINCE 1885"

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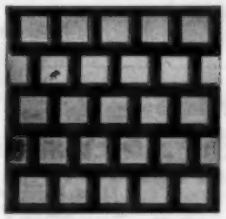
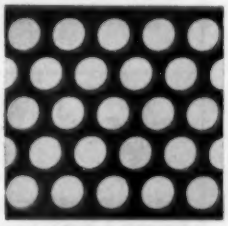
For Efficiency CROSS *in Sizing*



SCREENS



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Order "CROSS" . . . it's your guarantee of top performing Revolving, Vibrating and Shaking Screens.

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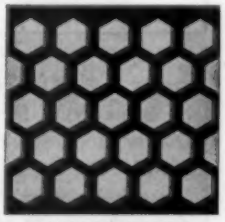
Services of Cross Field Engineer and technical data on request.



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Experienced man required to service portable and stationary rock crushing equipment. Will be located at factory in medium size midwestern city. Travel necessary in United States and abroad. Should have potential sales ability. Excellent opportunity with expanding small manufacturer for man having service experience who woud like to move into sales work as fast as capabilities are proved. Replies confidential. Our employees know of this advertisement. Include photograph and complete information in reply.

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Producer of lightweight aggregate located in the southeast has openings for qualified applicants who have experience in sales, engineering, and production. Applicant must have at least 5 years experience in a field that will have given him the necessary capabilities. In reply state age, education, experience, present employment, personal data, and salary expected. Replies confidential.

Box No. PQ-914
c/o Pit & Quarry Publications
431 S. Dearborn St. Chicago 5, Illinois

PROJECT ENGINEER WANTED

Graduate Mining, Metallurgical, Chemical or Mechanical Engineer, preferably 25 to 35 years old, wanted by medium size progressive heavy machinery manufacturing company located in Southeastern Pennsylvania. To assist in design and preparing for market of various lines of equipment used in mineral dressing, heavy chemical, cement and rock products industries. Must have had engineering and field experience, and be willing to work on drafting board, travel and do field service. Opportunity also exists for a properly qualified individual, eventually to become a sales engineer. Salary open.

BOX PQ-904, c/o PIT AND QUARRY PUBLICATIONS
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Crushing Plants
Cement Plants
Storage Methods
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Consulting Engineer

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Newburgh, N. Y.
Phone: 1828

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Chicago 6, Ill.
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Appraisals

WANTED

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Carry on field investigations and geological studies for portland cement manufacturer for purpose of developing new sources of raw materials and extending knowledge of present deposits. Also, assist in supervision of quality control of company products. Will headquarter in Chicago, but must be free to travel. Will consider recent graduates as well as experienced applicants. Must have degree. Give full details on experience, training, personal data, and salary desired in first letter.

Reply to
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JAW CRUSHERS — 6" x 3" to 60" x 48"

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It will pay you to consult

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Machine Shop Facilities
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Limestone Quarry Near Area of Rapid Growth and Development with Favorable Transportation.

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All Sizes

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30" Superior McCulley Gyratory Crusher. Chilled C.I. Condition: Good. Price F.O.B. rails, Central Missouri—$24,000. Inspection invited.

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431 S. Dearborn St. Chicago 5, Ill.

WANTED

Superintendent for large Stone Quarry and Crushing Operation. Must be qualified to do blasting and to supervise entire operation. Location in Eastern State. Please advise experience and capabilities and salary expected.

BOX PQ-1025 c/o PIT AND QUARRY PUBLICATIONS
431 S. Dearborn St. Chicago 5, Ill.

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We own an unlimited deposit of a high grade quartzite, located in Wis. Want a reliable producer who is financially capable to quarry and set up a stationary plant for crushing and screening for volume production. Have market for large tonnage and will buy output. Will enter into long term contract with the right party. All year round operation. Shipments mostly via rail from our own track.

Box PQ-1014, c/o PIT AND QUARRY PUBLICATIONS
431 S. Dearborn St. Chicago 5, Ill.

WANTED

Maintenance Superintendent. Must be familiar with power shovels and stone crushing and screening equipment. Must be capable taking full charge of Machine Shop in Stone Quarrying and Crushing Operation. Location in Eastern State. Please advise experience and salary expected.

BOX PQ-1026 c/o PIT AND QUARRY PUBLICATIONS
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For Sale
EUCLID REAR DUMP TRUCKS

Model 9W BUCYRUS-ERIE Dragline, 8 yd.
Model 1055 P & H Shovel & drag, 3½ yd.
Model 1600 P & H Shovel, 6 yd.
Model 54B BUCYRUS-ERIE Shovel, 2½ yd.
Model 54B BUCYRUS-ERIE Dragline, 2½ yd.
Model 38B BUCYRUS-ERIE Shovel, 1½ yd.
Model 120B BUCYRUS-ERIE Shovel & Drag, 5 yd.
Model 170B BUCYRUS-ERIE Shovel, 8 yd.
Model 200B BUCYRUS-ERIE Dragline, 5 yd.
Model 5-W BUCYRUS-ERIE Dragline, 6 yd.
Model 4500 MANITOWOC Dragline, 5 yd. & 5 yd. shovel.
Model 4161 MARION Shovel & drag, 5 yd.
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Please furnish full detail.

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3 Superior McCully 10" Crushers
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3' SYMONS SHORT HEAD CRUSHER
Coarse Bowl

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2—Heltzel single screen finishing machines, hyd. control, on Pneu. tires.
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1—N.W. Mod. 25 crane, shovel, diesel power.
2—Insley 60 cu. ft. floor hoppers.
1—Browning steam loc. 40 ton crane.
1—Kiesler ⅜ Clam, heavy duty.
3—Systron gas hammer, like new.
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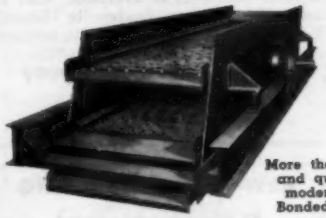
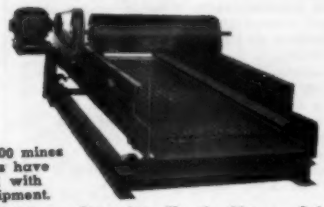
"For Continuous, Economical Screening of High Tonnages"





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226AS	2'x6'	2	473	395
136AS	3'x6'	1	581	495
236AS	3'x6'	2	665	585
336AS	3'x6'	3	916	815
138AS	3'x8'	1	685	575
238AS	3'x8'	2	761	695
338AS	3'x8'	3	959	845

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Heavy Duty Screens from.....$1119.00 General Duty Screens from.....$355.00

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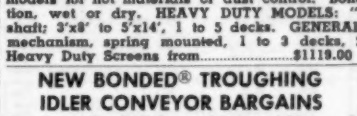

CONVEYOR PRICES INCLUDE BELTING

Belt Width	Length of Conveyor	List Price	Sale Price
14"	25'	$1166	$ 672
14"	50'	2016	1064
16"	20'	1070	592
16"	45'	1928	1012
16"	60'	2494	1264
18"	25'	1327	739
18"	45'	1986	1085
18"	60'	2575	1354
18"	85'	3466	1798
18"	100'	4000	2065
20"	25'	1368	770
20"	45'	2122	1145
24"	25'	1428	835
24"	45'	2227	1237
24"	60'	2826	1549
24"	100'	4425	2339
24"	130'	5624	2995
30"	25'	1535	915
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30"	85'	4029	2316

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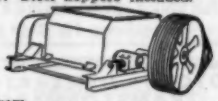

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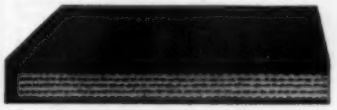

Width	List Price	Sale Price
14"	$3.43 foot	$2.75 foot
16"	3.86 foot	2.89 foot
18"	4.27 foot	3.19 foot
20"	4.69 foot	3.69 foot
24"	5.55 foot	4.14 foot
30"	6.77 foot	5.06 foot

Additional widths and plies available at low prices. Write for free sample.

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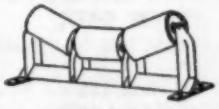
25% BELOW LIST PRICE



3-roll, 5" diameter Troughing Idlers for

14" belt	$17.25	24" belt	$19.75
16" belt	18.00	30" belt	20.50
18" belt	19.00	36" belt	21.25
20" belt	19.25	48" belt	23.75

1-roll, 5" diameter Return Idlers for

14" belt	$6.75	24" belt	$ 8.00
16" belt	7.00	30" belt	8.75
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20" belt	7.75	48" belt	10.75

All steel. Interchangeable with other well-known makes. Replaceable ball bearings. Either sealed type (pre-lubricated) or with alemite fittings. Maintenance is negligible.

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Mfrs. of Scales, Conveyors, Conveyor Parts, Idlers, Vibrating Screens, Crushers and Feeders
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Cedarapids 3240 5A primary unit. New condition.
Cedarapids 4A 2540 primary unit with feeder, etc.
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Cedarapids 42" x 10' feeder.
Williams 20" pulverizer.
Cedarapids 2020 double impeller breaker.
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Austin-Western 15x24 jaw.
Cedarapids 4' x 12' double deck screen.
Tyler-Niagara 3' x 12' triple deck screen.
Cedarapids 3' x 8' double deck screen.
15 cu. yd. Cedarapids sand drag. New.
New 12" x 35' inclined open elevator.
60-ton, 2-comp., 8' x 18' storage bin w/clam gates.
100-ton, 2 comp., 13'x23' bins.
Special bins to your specifications.
Conveyors—18"-24"-30"-36". Also belting.
18" dia. x 20" face magnetic pulley.

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Lorain 820, 2-yd. diesel shovel, crane, drag.
Brownhoist 1-yd. gas shovel-crane.
Lorain MC-414 20-ton truck crane.
Lorain MC-254-W crane.
Lorain SP-254-W crane.
Lorain Model 30, ½-yd. crawler shovel-clam.
Unit Model 614 diesel backhoe.

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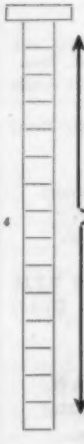

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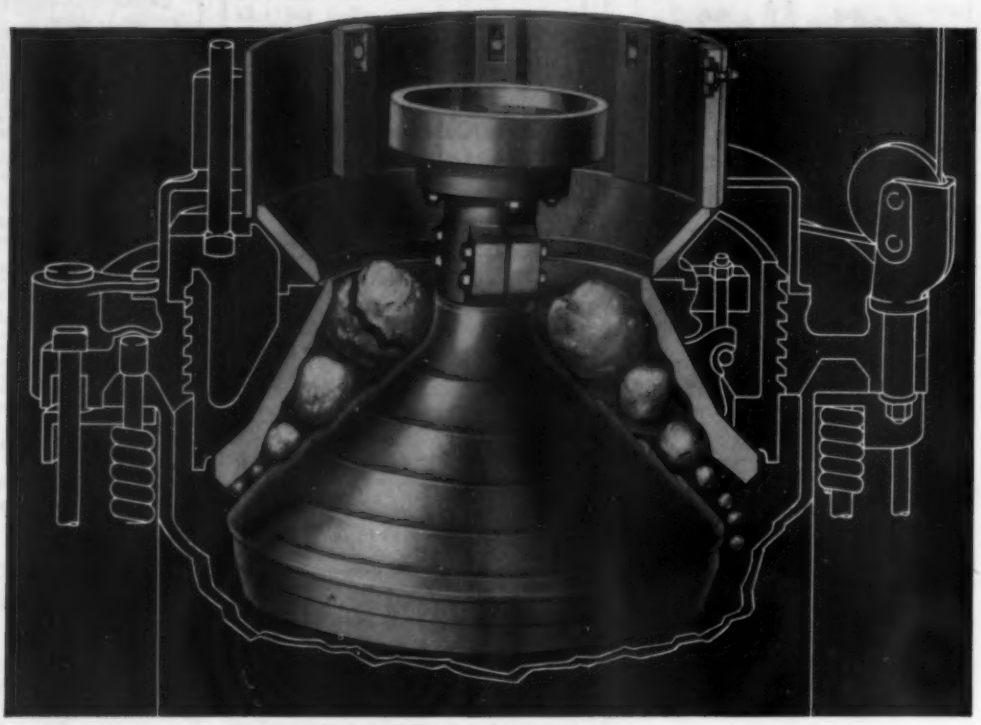

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AMERICAN MANGANESE STEEL DIVISION
Chicago Heights, Ill.

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Studies in Centralized Lubrication
No. 183

HERE'S how to do a better job of greasing gears and save a lot of lubricant and labor besides. Just install Farval Spray Valves. They can reduce oil and grease consumption and oiling labor as much as 95%. Then you can throw away the oil can and grease bucket, and put your oilers on other constructive work.

Shown at right is a new Farval Spray Valve System developed for large-diameter wide-faced gears. Installed on a panel mounted on the gear housing are Dualine valves, spray valves and reversing valve. An automatic air-operated barrel pump supplies the lubricant.

Farval Spray Valves are completely flexible as to arrangement and operation. They can be used alone or as part of a Dualine System—wherever a supply of compressed air is available. As with standard Dualine valves, the spray can be operated as often or as infrequently as needed to deliver any desired amount of oil or grease, on gears, sliding bearing surfaces or other areas needing lubrication. There is no waste or mess. Quantity of air used is limited to the exact amount required to spray each delivery of oil or grease.

Hundreds of Farval Spray Valve Systems are now in use in many industries. Why not investigate this simple, inexpensive method for your own plant equipment? Tell us the type of gearing or machines for which you would consider automatic spray lubrication. One of our field representatives will be glad to recommend the Farval system best suited to your needs. Write for Bulletin 26-R. The Farval Corporation, 3280 East 80th Street, Cleveland 4, Ohio.

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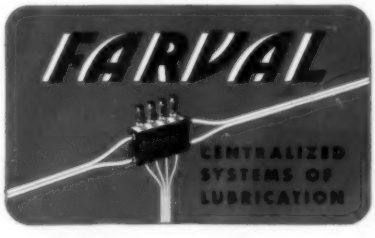

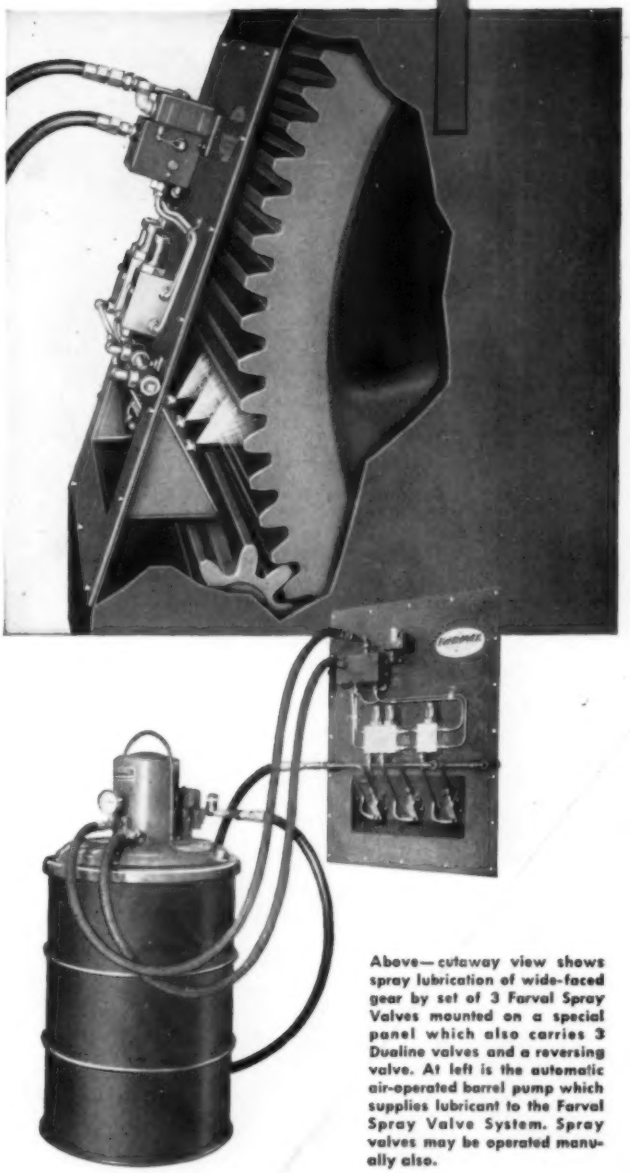

Above—cutaway view shows spray lubrication of wide-faced gear by set of 3 Farval Spray Valves mounted on a special panel which also carries 3 Dualine valves and a reversing valve. At left is the automatic air-operated barrel pump which supplies lubricant to the Farval Spray Valve System. Spray valves may be operated manually also.

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NEW MULTI-PURPOSE MARFAK! *Texaco Marfak Heavy Duty Special* is the new, lithium-base, multi-purpose member of the famous Marfak family — especially designed for those who want *just one lubricant* to handle all chassis, wheel bearing, water pump and other bearing lubrication. *Texaco Marfak Heavy Duty Special* pumps easily even at winter temperatures and lubricates effectively regardless of the thermometer. It resists water washing and stands up in the severest service.

LUBRICATE chassis bearings with *Texaco Marfak* and see how much longer your equipment stays on the job, how much performance is improved, how much maintenance costs are reduced. *Texaco Marfak* is the adhesive-cohesive lubricant that stays in the bearings under the roughest service, guards against dirt and moisture, affords longer lasting protection against wear and rust. Chassis parts stay in top condition longer, up-keep costs are low.

For a superior wheel bearing lubricant, try *Texaco Marfak Heavy Duty*. It gives thousands of miles of extra protection because it seals itself in the bearings, while sealing out dirt and mud. You'll get longer bearing life, safer braking. No seasonal change is necessary.

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Texaco Track Roll Lubricant, made especially to keep out dirt and moisture, fight off rust and wear . . . assures dependable operation for crawler mechanisms, longer service for rollers.

Consult a Texaco Lubrication Engineer for helpful advice in selecting the proper lubricants. Call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write:

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